

THE ILLUSTRATED LONDON NEWS

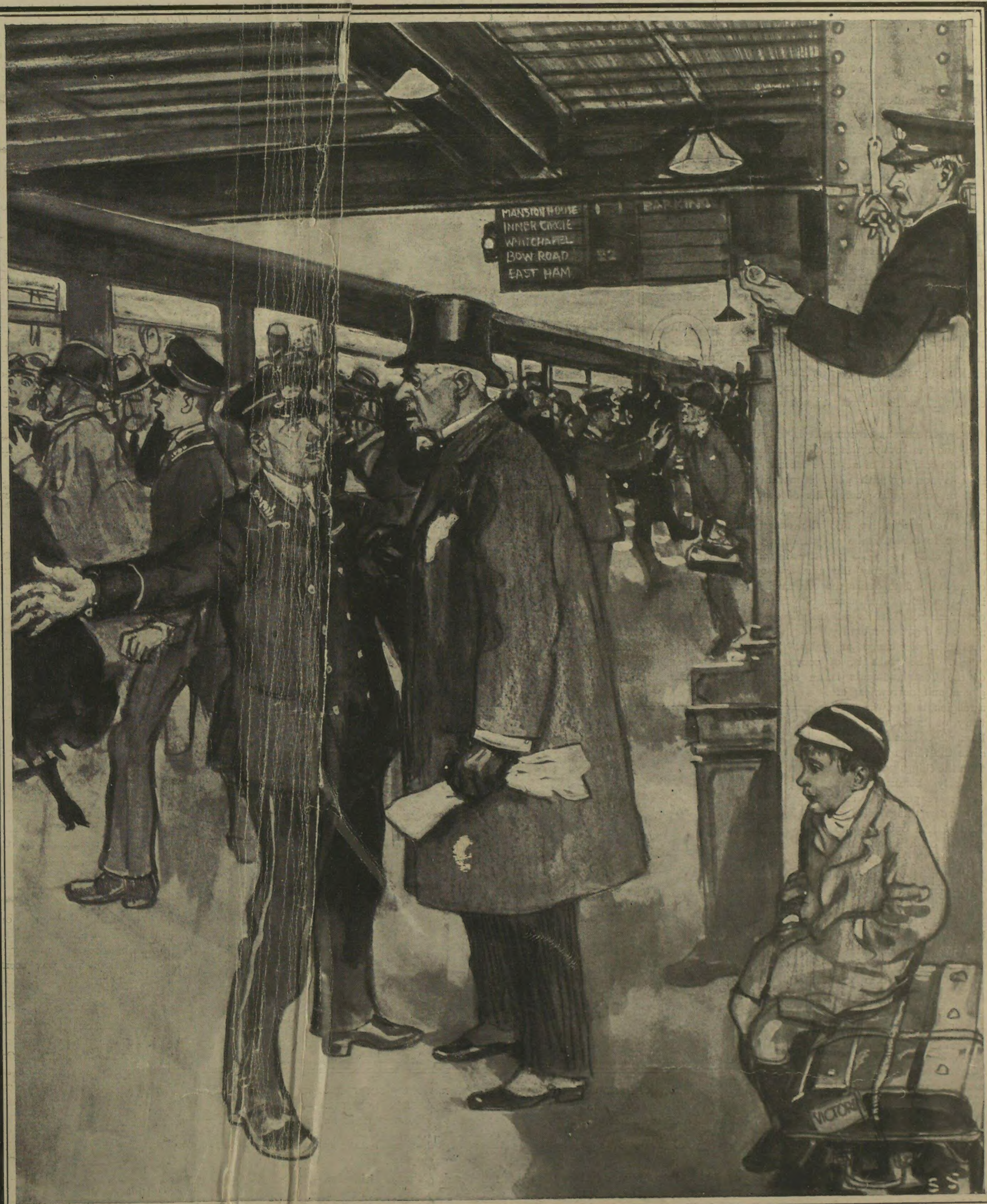
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ONE SHILLING.

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SPEEDING-UP LAGGARDS ON THE DISTRICT RAILWAY: A STATION-CONTROLLER WITH STOP-WATCH AND SIREN.

The District Railway has tried a new experiment, to avoid delay in re-starting trains at their busiest stations. At Victoria, where 45,000 passengers are booked daily, a new official known as the Station-Controller is posted on an observation pedestal, armed with a stop-watch and a siren. If a train has stopped at the station for thirty seconds and the starting signal is clear, he sounds the siren as a warning that following trains are

liable to be checked in the tunnels unless the train is despatched at once. Additional platform men are on duty to shepherd passengers into the coaches, so that there will be even shorter shrift for laggards than before. The new plan is in force between 8 and 10 a.m. on the up line, and on the down line between 5 and 7 p.m., or 12 noon and 2 p.m. on Saturdays. On the first day the average stopping time was 22½ seconds.

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By G. K. CHESTERTON.

THE truisms are all true; and the passing of Christmas and the approach of the New Year are rightly made a measure of progress, or, what is more practical, reform. It is proverbially true of that most practical of all kinds of reform which we call reformation; as we speak of the personal reformation of a drunkard or a thief. In the mystical triad of faith, hope, and charity, it is obvious that Christmas stands for charity, and among the more fortunate, for faith. Equally obviously the New Year may well stand for hope. And equally proverbially it does stand for those more virile and creative hopes which we call resolutions. In private affairs such things, though very real, will be fairly recurrent; for the soul and its sins are in every sense a problem of eternity. But in public affairs, such as are more commonly considered in public discussion, the problem will naturally be conditioned by the period. And the period in which we now live, the period of rather restless peace after the rigours of the Great War, has a peculiar problem of its own. While the good of the war was destructive, the good of the peace may well seem somewhat negative. Our relief is great, and our gratitude should be still greater; but they are primarily relief and gratitude after a great escape. We can all the better afford to call it an escape, because we can claim with justice that it was not an evasion.

A vast amount of nonsense is talked against negative and destructive things. The silliest sort of progressive complains of negative morality, and compares it unfavourably with positive morality. The silliest sort of conservative complains of destructive reform, and compares it unfavourably with constructive reform. Both the progressive and the conservative entirely neglect to consider the very meaning of the words "yes" and "no." To give the answer "yes" to one question is to imply the answer "no" to another question; and to desire the construction of something is to desire the destruction of whatever prevents its construction. This is particularly plain in the fuss about "negative morality," or what may be described as the campaign against the Ten Commandments. The truth is, of course, that the curtness of the Commandments is an evidence, not of the gloom and narrowness of a religion, but, on the contrary, of its liberality and humanity. It is shorter to state the things forbidden than the things permitted; precisely because most things are permitted, and only a few things are forbidden. An optimist who insisted on a purely positive morality would have to begin (supposing he knew where to begin) by telling a man that he might pick dandelions on a common, and go on for months before he came to the fact that he might throw pebbles into the sea; and then resume his untiring efforts by issuing a general permission to sneeze, to make snowballs, to blow bubbles, to play marbles, to make toy aeroplanes, to travel on Tooting trams, and everything else he could think of, without ever coming to an end. In comparison with this positive morality, the Ten Commandments rather shine in that brevity which is the soul of wit. It is better to tell a man not to steal than to try to tell him the thousand things that he can enjoy without stealing; especially as he can generally be pretty well trusted to enjoy them.

But of course the fallacy is even more fundamental than this. Negative morality is positive morality,

stated in the plainest and therefore most positive way. If I am told not to murder Mr. Robinson, if I am stopped (as it were) in the very act of murdering Mr. Robinson, it is obvious that Mr. Robinson is not only spared, but in a sense renewed, and even created. And Mr. Robinson is a positive personality; an exceedingly positive personality. It is not necessary to



IN HONOUR OF CANADA'S "GLORIOUS DEAD":
A MEMORIAL CROSS FOR RELATIVES.

The Dominion Government is presenting one of these memorial crosses to the mothers or widows of all Canadian soldiers or sailors who lost their lives in the war. It is thus a counterpart of the British memorial plaque, which we illustrated recently.

Photograph by Topical.

begin at the crown of his head and work down to the soles of his feet, in order to prove that Mr. Robinson is fearfully and wonderfully made. It is not necessary, in the very act of averting the assassin's blow, to describe all the hairs of his head which only God has

what used to be called Christendom, will realise that its salvation is not negative, but highly positive, and even highly complex. They will rejoice at its escape, long before they have leisure for its examination. But, without examination, they will know that there is a great deal to be examined, and a great deal that is well worth examination. Nothing is negative except nothing; and it is not our rescue that was negative, but only the nothingness and annihilation from which we were rescued.

On the other side there is the same fallacy about merely destructive reform; and it could be applied just as easily to the merely destructive war. In both cases destruction may be essential to the avoidance of destruction, and also to the very possibility of construction. Men are not merely destroying a ship in order to have a shipwreck; they may be merely destroying a tree in order to have a ship. And the deepest and most democratic of all destructive revolutions was the Great War itself, which destroyed the whole elaborate and laborious machinery of Prussianism, which would otherwise have destroyed all the normal liberties and humours of humanity. To complain that we spent those four years in mere destruction is to complain that we spent them in escaping from being destroyed. It is, once again, to forget the fact that the failure of the murderer means the life of a positive and not a negative Mr. Robinson. It means every moment of Mr. Robinson's after-life: every evening when he looks at the sunset, every morning when he listens to the birds, every pipe he smokes, and every paper he reads. If we take the imaginary Mr. Robinson as a type of the average modern man in Western Europe, and study him from head to foot, as above suggested, we shall doubtless find defects as well as merits; and in the whole civilisation we have saved, we shall find defects that amount to diseases. It is topheavy, like a top hat, with a towering accumulation of disproportionate wealth in the wealthy. Its feet, if not of clay, are certainly in clay; stuck in the mud of a materialistic industrial destitution and despair. Mr. Robinson is not a demigod, after the war, any more than before the war; but he is more like a demigod than the devil who nearly strangled him. And to say it is not a positive good and glory to have saved him from strangling is to miss the whole meaning of human life. It is to forget every good as soon as we have saved it; that is, to lose it as soon as we have got it. Progress of that kind is a hope that is the enemy of faith, and a faith that is the enemy of charity.

When, therefore, our hopes for the coming time seem disturbed or doubtful, when the war seems inconclusive, and the peace chaotic, let us remember that it is really our disappointment that is an illusion. It is our rescue that is a reality. Our grounds for gratitude are really far greater than our powers of being grateful. We could only measure them by making vivid once more that appalling possibility that has now

passed like a nightmare; by realising a war not inconclusive, but concluded by Prussian triumph, a peace not chaotic, but ordered by Prussian arrogance. If it is in his mood of a noble sort of humility, an even of a noble sort of fear, that new things are really made. We adorn things most when we lose them most; and we love them most when we have nearly lost them.

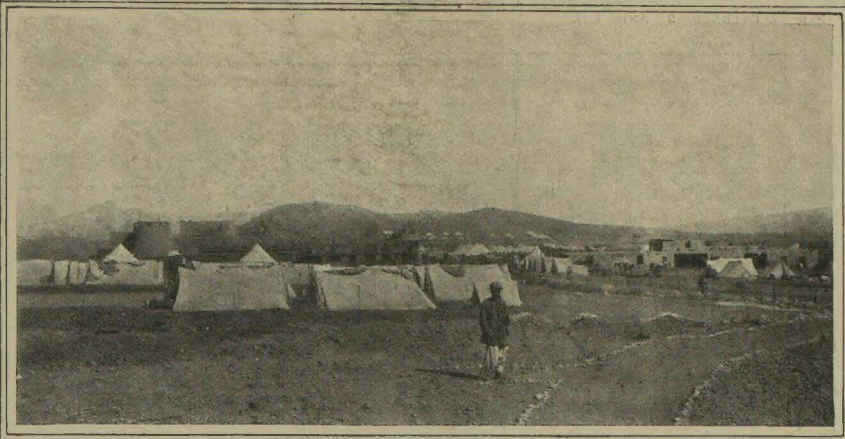


FAMOUS IN THE ANNALS OF ANTARCTIC EXPLORATION: A RELIC OF SIR ERNEST SHACKLETON'S GREATEST ADVENTURE, ON VIEW AT THE MIDDLESEX HOSPITAL.

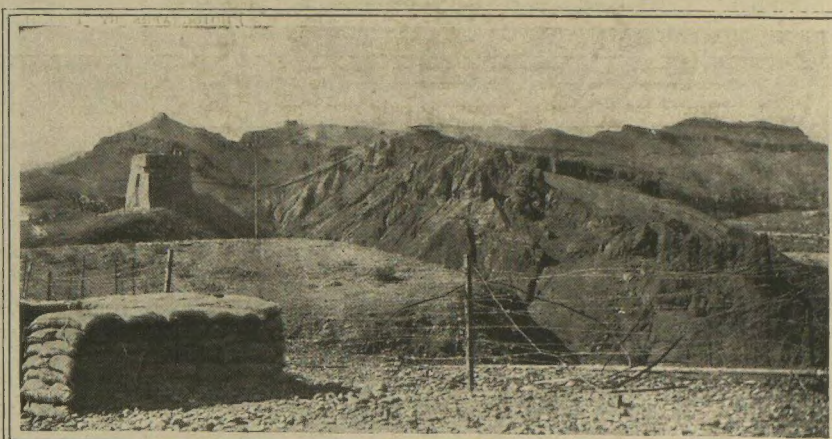
Sir Ernest Shackleton describes in his book, "South"—the story of his 1914-1917 Antarctic Expedition—how he made a perilous voyage of 800 miles from Elephant Island to South Georgia, in an open boat, to bring help to the rest of his party left on the island. The boat was recently placed on view in the courtyard of the Middlesex Hospital, the small charge made to see it going to the hospital funds.—[Photograph by Sport and General.]

numbered; or the exact number of his toes, which are the basis of a more mortal arithmetic. Those who like Mr. Robinson, among whom my reactionary romanticism might suggest the inclusion of Mrs. Robinson, will be aware that they have recovered a living and complex unity, which it is easier to esteem in the bulk than to describe in detail. And similarly, those who like European civilisation, and the common code of

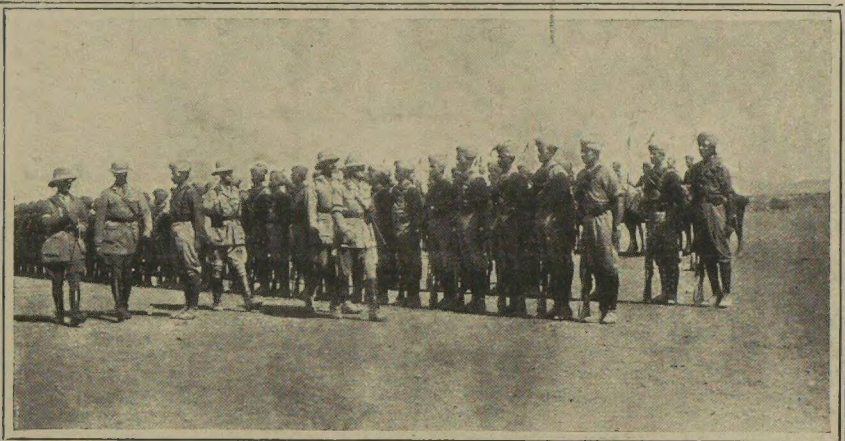
The Campaign against the Mahsuds and Wazirs: Incidents on the North-West Frontier.



WHERE THE INDIAN GOVERNMENT'S TERMS WERE DICTATED TO THE MAHSUDS: KHIRGI POST AND CAMP.

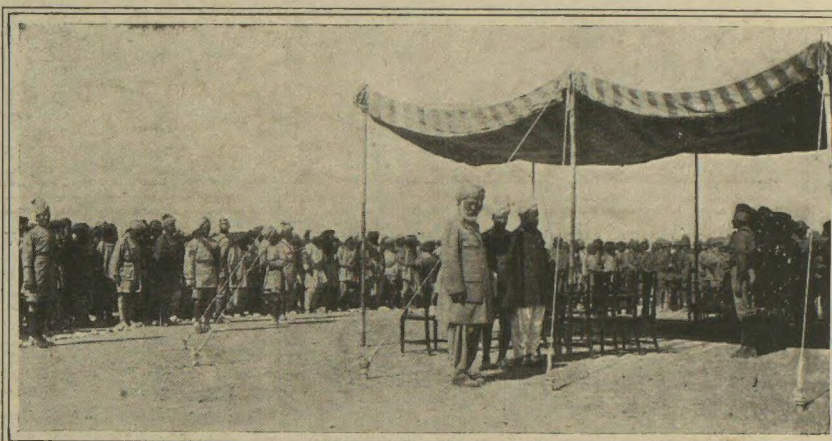


AT THE ENTRANCE TO THE MAHSUD COUNTRY: PICKETS BEING CONSTRUCTED ALONG A RIDGE TO PROTECT THE ROUTE.



INSPECTING A GUARD OF HONOUR: MAJOR-GENERAL S. H. CLIMO, COMMANDING THE WAZIRISTAN FORCE.

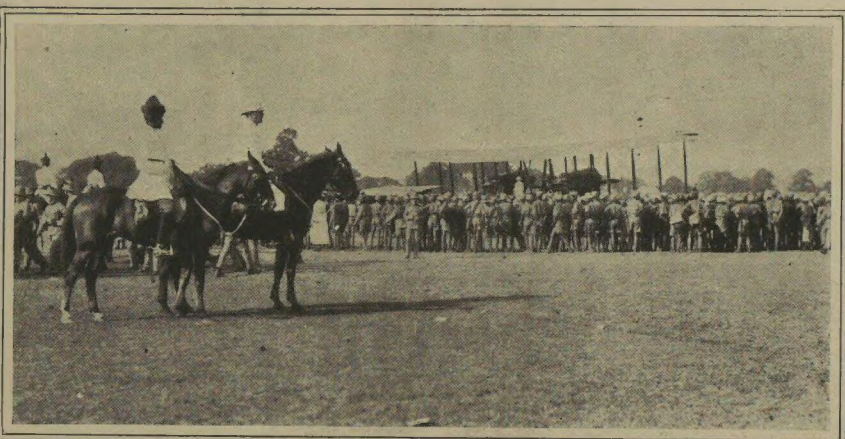
It was announced on December 30 that the Mahsuds, the strongest tribe in revolt, had surrendered to the British. In an action on December 21 over 200 Mahsuds and 30 Wana Waziris were killed, while the British casualties were: 58 killed and missing, including 2 British officers, and 222 wounded, including 8 British officers. It was at the "zirga" held at Miramshah, in the Tochi Valley (shown in our right-hand lower



MALIKS (HEAD-MEN) OF THE WAZIRS AWAITING MAJOR-GENERAL CLIMO: A ZIRGA AT MIRAMSHAH, TOCHI VALLEY.

photograph) that terms were dictated to the Northern Wazirs. The photograph shows some of the "Maliks," or head-men, who have just risen to their feet on the approach of the British commander, Major-General Climo. The guard of honour seen in the adjoining photograph was furnished by the 55th Indian Regiment (Coke's Rifles). In the rear are men of the 31st Lancers.

Knights of the Air at Calcutta: A Stage of the England-to-Australia Flight.



SIR ROSS SMITH'S ARRIVAL AT CALCUTTA: THE AEROPLANE SURROUNDED BY INDIAN TROOPS.



THE CENTRE OF AN ADMIRING CROWD: SIR ROSS SMITH'S AEROPLANE ON THE CALCUTTA RACECOURSE.

It was announced recently that the King had conferred Knight-hoods of the Order of the British Empire, Civil Division, on Captain Ross Macpherson Smith, M.C., D.S.C., A.F.C., of the Australian Flying Corps, and his brother, Lieut. Keith Macpherson Smith, late of the R.A.F., in recognition of the valuable services rendered to aviation by their successful flight from England to Australia. A bar to the Air Force Medal was also conferred on Sergts. J. M. Bennett and W. H. Shiers, who accompanied them. The late Sir John Alcock and Sir A. Whitten Brown were similarly knighted for their flight across the Atlantic.



JUST ARRIVED AT CALCUTTA: SIR ROSS SMITH (SECOND FROM RIGHT, IN FRONT) AND HIS BROTHER, SIR KEITH SMITH (EXTREME RIGHT).

It will be remembered that Sir Ross Smith and his companions arrived at Port Darwin, on the north coast of Australia, on December 10, having started from Hounslow on November 12, and thus won the £10,000 prize offered by the Commonwealth Government for a flight from England to Australia on a single machine within thirty days. They landed on the way at Lyons, Pisa, Rome, Taranto, Suda Bay, Cairo, Damascus, Ramadieh, Basra, Bunder Abbas, Karachi, Delhi, Allahabad, Calcutta, Akyab, Rangoon, Bangkok, Singapore, Kalidjatti (West Java), and Bima (Soembawa). The total distance was 11,294 miles.

There was great excitement at Calcutta when Sir Ross Smith landed there, on November 28, during his flight to Australia. His entry in his diary for that day reads: "Left Allahabad 8.30; arrived Calcutta 1.45. Good trip. Following wind, clear sky, uneventful. Landed on the Racecourse; large crowd. All well. Akyab to-morrow." Many of the natives who gathered about the machine—a Vickers-Vimy-Rolls—had never seen an

aeroplane before. In the upper left-hand photograph British and Indian mounted police are shown in the foreground. From Port Darwin Sir Ross Smith started to fly across Australia to Sydney and Melbourne, but after covering 1473 miles of the distance he had to abandon the flight at Charleville, in Queensland, 923 miles from Melbourne, owing to the crank arm of his machine breaking.

BY CAMERA: NEW TRAINS; AN AIRMAN'S FUNERAL; RAVING POLITICS

PHOTOGRAPHS BY TOPICAL, C.N., NEWSPAPER ILLUSTRATIONS, AND I.B.



WITH FIVE SWING DOORS ON EACH SIDE: ONE OF THE NEW AND IMPROVED COACHES ON THE METROPOLITAN RAILWAY.



STRAP-HANGING ABOLISHED: A NEW METROPOLITAN RAILWAY CARRIAGE WITH "STEADYING" RAILS FOR STANDING PASSENGERS.



DISTURBANCES IN JOHANNESBURG AFTER GENERAL HERTZOG'S ENTRY ON NOVEMBER 20: HIS CAR UPSET AND ON FIRE.



THE FUNERAL OF SIR JOHN ALCOCK, THE ATLANTIC AIRMAN, AT MANCHESTER: R.A.F. OFFICERS BEARING THE COFFIN.



LORD FRENCH'S NARROW ESCAPE FROM ASSASSINATION: THE BULLET MARK IN THE BACK OF HIS CAR.



THE ATTACK ON LORD FRENCH: THE SIDE OF HIS CAR, SHOWING DAMAGE TO THE DOOR CAUSED BY A PROJECTILE.

Some new coaches have just been placed in service on the Metropolitan Railway.—The South African Nationalist leader, General Hertzog, rode through Johannesburg on November 20 at the head of a commando of some 800 mounted Boers. Disturbances began, but the police saved the situation.—The funeral of Sir John Alcock, the famous airman who crossed the Atlantic, and was killed recently in a flying accident near Rouen, took place on December 27 at Manchester, the home of his parents. The funeral procession started from

their parish church, Holy Innocents, Fallowfield. In Albert Square it was joined by the Lord Mayor of Manchester and other members of the Corporation. The funeral service was held in the Cathedral, and thence the procession passed to the Southern Cemetery. The coffin was draped in the Union Jack, with the airman's military cap upon it, and was borne on an aeroplane trailer drawn by an R.A.F. motor. The King and Prince Albert sent messages of sympathy.

MEN OF THE MOMENT: PERSONALITIES IN THE PUBLIC EYE.

PHOTOGRAPHS BY LANGIER, "DAILY MAIL," VANDYK, CENTRAL PRESS, ELLIOTT AND FRY, ERNEST BROOKS, AND RUSSELL.



THE NEW UNDER-SECRETARY FOR AIR:
MAJOR G. C. TRYON, M.P.

Major Tryon, who succeeds General Seely, has been M.P. (Unionist) for Brighton since 1910.



KILLED IN A SHOOTING AFFRAY IN PHOENIX
PARK: THE LATE LIEUT. FRED BOAST.

Lieut. Boast, South Lancashire Regiment, an officer of the Viceregal Guard in Dublin, was killed on December 28.



A LOSS TO THE HOUSE OF COMMONS: THE
LATE SIR CHARLES HENRY, BT., M.P.

Sir Charles Henry, who died on December 27, was M.P. (Coalition Liberal) for the Wrekin Division of Shropshire.

1
THE Commission under Lord Milner, whose arrival in Cairo was announced on Dec. 9, has since been busily at work investigating the political conditions in Egypt, with a view to arriving at a satisfactory settlement of the present unrest. Besides going through a vast mass of documents, they have been probing opinion through personal and unofficial interviews. Their task was made difficult by the opposition of the powerful student element in Cairo, which attempted to boycott

[Continued opposite.



INVESTIGATING THE EGYPTIAN QUESTION ON THE SPOT: THE MILNER COMMISSION IN CAIRO.

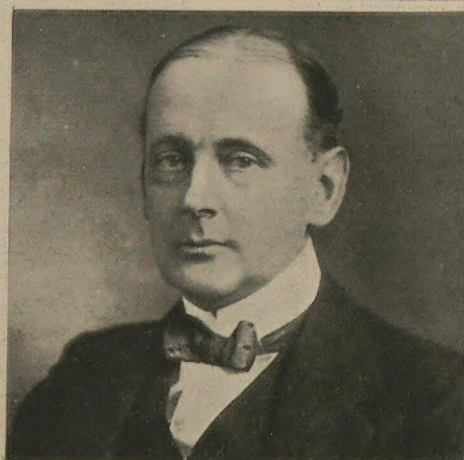
In the Front Row (from left to right) are: Sir J. Rennell Rodd, Lord Milner, and Gen. Sir John Maxwell. In the Back Row (left to right) are: Mr. A. T. Lloyd (Secretary), Mr. C. J. B. Hurst, K.C., Brig.-Gen. Sir Owen Thomas, M.P., Mr. J. A. Spender, and Mr. E. M. B. Ingram (Assistant Secretary, and Private Secretary to Lord Milner).

2
Continued.] the Mission by intimidating responsible Egyptians, and thus preventing official contact between them and the Mission. Regarding the members, it may be recalled that Sir John Maxwell commanded the forces in Egypt in 1914-15; Sir Rennell Rodd was lately British Ambassador in Rome; Sir Owen Thomas is a Labour M.P., and an authority on tropical agriculture; Mr. J. A. Spender is Editor of the "Westminster Gazette," Mr. C. J. B. Hurst is Assistant Legal Adviser to the Foreign Office.



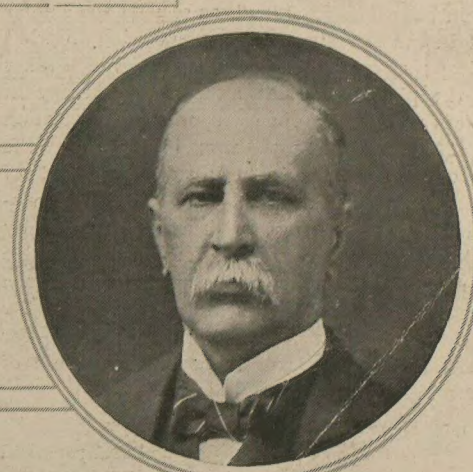
THE NEW PERMANENT SECRETARY TO THE
WAR OFFICE: SIR H. J. CREEDY.

Sir Herbert Creedy, who succeeds Sir Reginald Brade, became Resident Clerk at the War Office in 1903.



EX-PERMANENT SECRETARY TO THE WAR
OFFICE: SIR REGINALD BRADE (RESIGNED).

Sir Reginald Brade, who has served the War Office for 35 years, became Permanent Secretary in 1914.



A GREAT MEDICAL TEACHER: THE LATE
PROFESSOR SIR WILLIAM OSLER.

Sir William Osler, who died on December 28, had been Regius Professor of Medicine at Oxford since 1905.

Medical education has lost a great and honoured figure by the death of Sir William Osler, which took place at Oxford on December 29. He was born in Canada, at Bondhead, Ontario, in 1849, and first studied medicine at Toronto; afterwards at Montreal, London, Leipzig, and Vienna. In 1874 he returned to Canada to occupy the chair of the Institutes of Medicine at McGill University. Ten years later he became Professor of Clinical Medicine in the University of Pennsylvania, at Philadelphia, a post which he held for

five years. He was then appointed Professor of the Principles and Practice of Medicine in the Johns Hopkins University at Baltimore, where he remained until he went to Oxford, as Regius Professor of Medicine, in 1905. His book "Principles and Practice of Medicine," which became a standard work, first appeared in 1892. A passage in his farewell address at Baltimore gave rise to the "too old at forty" theory. He thought men should retire at sixty, but he continued working till his death, at seventy.

MATTERS OF INTEREST.

PLANT AUTOGRAPHS.

(See Illustrations opposite.)

SIR J. C. BOSE'S recent lecture at the India Office on "The Unity of Life" has aroused a very keen and widespread interest among the public, and we are able to give a short sketch of some of his discoveries from his published works.* Two years ago he dedicated the Bose Research Institute to the nation.

The Bose Institute stands in the very centre of intellectual activity of Calcutta. A vivid sign of the Institute and its work is a large double tracing being automatically made in two parallel curves before the eyes of the observer. One of these curves records the resultant of the essential changes of the atmospheric environments—temperature, light, and others—while the other summarises the response of a large tree to those changing conditions for every minute of the twenty-four hours. This autograph of the tree gives a striking and vivid demonstration of Sir J. C. Bose's discovery that all plants, including even rigid trees, are fully sensitive to the changes around them. Even the passage of a drifting cloud is perceived and recorded by the tree in its own peculiar script by an instrument invented for this purpose—a marvel of scientific ingenuity.

It is only by the study of the simple type of life that we can ever expect to solve the more complex problems of animal life, including that of man. Is there any possible relation between our own life and that of the plant? The question is not one of dreamy speculation, but of actual demonstration by some method that is unimpeachable. The final appeal must be made to the plant itself, and no evidence should be accepted unless it bears the plant's own signature. This meant, first, the discovery of some compulsive force which would make the plant give some answering signal; then instrumental means had to be supplied for the automatic conversion of these signals into an intelligent script; and last of all, we had ourselves to learn the nature of the hieroglyphic. It can easily be imagined how extraordinarily delicate the instrument must be which detects all these and reveals the secrets of the unvoiced and hidden life.

Sir Jagadis invented a special apparatus known as the Resonance Recorder, by which the spontaneous pulsation in the plant or the throb evoked by an external shock is automatically recorded, the size of the plant giving a measure of the vitality of the plant. When highly stimulated, the pulses become enhanced in size; under depressing conditions the pulse-beats become enfeebled; and at the moment of death there is an end of all pulsation. This is seen exemplified in the automatic record of the leaflet of the Indian plant *Desmodium Gyrens*, which under the action of ether has its pulsation arrested, but on the blowing off of the narcotic vapour has its throbbing pulse restored. In the next record is seen the effect of poisons, the pulsation coming to permanent stoppage with the death of the plant. These investigations have completely established the fundamental unity of life-reactions in plant and in animal, as seen in the similar period of insensibility in both corresponding to what we call sleep; as seen in the death spasm, which takes place in the plant as in the animal. This unity in organic life is also exhibited in that spontaneous pulsation which in the animal is heart-beat; it appears in the identical effects of stimulants, anæsthetics, and of poisons in vegetable and animal tissues. This physiological identity in the effect of drugs is regarded by leading physicians as of great significance in the scientific advancement of medicine, since here we have a means of testing the effect of drugs under conditions far simpler than those presented by the patient—far subtler too, as well as more humane, than those of experiments on animals.

The measurement of the growth of the plant and its variation is a problem of great theoretical and practical importance, for the world supply of food depends on our power of stimulating growth. The difficulty of the investigation lies in the extraordinary slowness of the vegetable growth, which is about 6000 times slower than the proverbially slow-footed snail, with its speed of about four inches per minute. Sir Jagadis overcame this difficulty by the invention of his marvellous Magnetic Crescograph, which magnifies the growth movement of plants 10,000,000 times. Our mind cannot grasp a magnification so stupendous. How can we translate it in terms which can be understood? Let us take our slow-footed snail and magnify its movements

by the Magnetic Crescograph. A magnification of 10,000,000 times would convert its speed to something to which it is difficult to find a parallel even in modern gunnery. The 15-inch gun of the *Queen Elizabeth* throws out a shell with a muzzle velocity of 8,500,000 feet per hour; but the crescographic snail would move at a speed of 200,000,000 feet per hour, or twenty-four times faster than the cannon-shot. Turning to cosmic movements, a point on the equator whirls round at a rate of over 1000 miles per hour. But the crescographic snail may well look down on the sluggish earth, for by the time the earth makes one revolution the snail would have gone round forty times.

The essential part of the Magnetic Crescograph consists of a long magnetic lever, the short arm of which is attached to the plant by a thread; the other end of the lever moves in front of a small suspended magnetic needle to which is attached a small mirror. A small movement of the free end of the magnetic lever causes a motion of the needle with its attached mirror. A beam of light is thrown on the mirror, and the reflected spot of light moves across the screen. Now, as the plant grows the movement becomes highly magnified by the optical system. Thus if there is any growth in the plant the spot of light moves across the screen in one direction; if the plant contracts under a shock, then the spot moves in the reverse direction; while on stoppage of growth the spot becomes stationary. With the experiments carried out with the Magnetic Crescograph the life of the plant becomes subservient to the will of the experimenter. A depressing drug is applied, and the march of life is slowed down until it is brought to a state of arrest. The plant is now hovering in an unstable poise between life and death; a little more tilt, and life passes into the interlocked rigidity of death. But application of a suitable antidote at once renews the arrested activity, which may even be exalted to many times the normal rate. The application of this invention in furtherance of scientific agriculture is obvious. The rule-of-thumb method used in the application of chemicals and of electricity in stimulating growth has not been found uniformly successful. Professor Bose has shown that in the application of stimulants, either chemical or electrical, the exact dose is all-important. He has found that a chemical that stimulates growth when applied in small quantity shows exactly the reverse effect when the critical dose is exceeded. Similarly with poisons. A minute dose of poison was found to stimulate vigorous growth, and the plants were found free from insect blight.

In the pursuit of his investigations, Sir Jagadis was led into the border region of physics of inorganic and the physiology of living matter, and was amazed to find boundary lines vanishing and points of contact emerge between the realms of the living and non-living. Inorganic matter was found anything but inert; it also was athrill under the action of multitudinous forces that played on it. Universal reaction seemed to bring together metal, plant, and animal under a common law. They all exhibited essentially the same phenomena of fatigue and depression, together with possibilities of recovery and of exaltation, yet also that of permanent irresponsiveness which is associated with death. And he thus concludes his memorable address before the Royal Institute: "It was when I came upon the mute witness of these self-made records and perceived in them one phase of a pervading unity that bears within it all things, the mote that quivers in ripples of life, the teeming life upon our earth and the radiant sun that shines above us—it was then that I understood for the first time a little of that message proclaimed by my ancestors on the banks of the Ganges thirty centuries ago: 'They who see but one in all the changing manifestation of this universe, unto them belongs Eternal Truth—unto none else, unto none else.'"

VIENNA:

BY ONE JUST RETURNED.

IN writing of conditions of life in the Austrian capital to-day, it is difficult to avoid an undue use of superlatives. The spectacle of a great city—only five years ago the centre of a powerful Empire—reduced now to hunger, misery, and despair, with that empire in pieces at her feet, cannot but move the most rabid of her former enemies. It leaves anyone who knew Vienna and the Viennese before the war awestruck.

It has been stated that 30 lb. of coal a week is allowed to each family. Were any Viennese household to receive that amount in a week, the occasion would be made one of family rejoicing, for the present ration is only 14 lb. This shortage of coal lies at the root of most of the misery and discomfort at present being endured

in Vienna. Little coal means little light, and all gas and electricity for private use has to be turned off at 8 p.m. Apart from the personal discomfort it entails, however, the serious and far-reaching effect which the coal shortage has upon every industry in the country can well be imagined.

There is also in Vienna to-day a scarcity of every conceivable kind of food. For the first two days of my stay the bread ration was equal to two slices per person per day. Afterwards that was reduced to one slice. The butter ration is one ounce per head weekly; but it might as well be anything, because it is not butter, and the ration is seldom received. Flour, milk, sugar, eggs, and potatoes are absolutely unobtainable by the ordinary middle-class citizen (the rich obtain them surreptitiously by paying colossal prices); while the shortage of meat is such that there are three meatless days a week. All milk is reserved for children.

The shortage of food has brought in its train that most contemptible of profiteers, the food speculator. They are chiefly café and hotel proprietors, who hoard such staple necessities as bread, milk, sugar and flour, for sale to such of their favoured patrons as are able to pay the prices demanded. The purchasers are always foreigners, as, owing to the rate of exchange, these articles are not dear to them, though they are impossible so for the Viennese themselves.

Much has been heard of late regarding the cost of living in Austria, and the following table will show the stupendous increase which has taken place since 1914.

Article.	Price in 1914.		Present Price	
	£	s. d.	£	s. d.
*Bread, per loaf	-	-	2½	2 0 0
*Milk, per tin	-	-	3	16 0
*Sugar, per lb.	-	-	2	17 6
Tea, per lb.	-	-	2 0	3 0 0
*Butter, per lb.	-	-	1 0	3 4 0
*Flour, per lb.	-	-	1½	16 0
Potatoes, per lb.	-	-	½	3 4
Eggs, each	-	-	1	4 0
Suit of Men's Clothes	-	5 0 0	120	0 0
Lady's Hat (best quality)	-	2 0 0	20	0 0
Lady's Costume	-	16 0 0	200	0 0

* These articles are rationed. The "present price" is that for illicit supplies.

In addition, an ordinary dinner in a restaurant costs at least £4; while a room in a hotel costs from 30s. to £2 a night.

The sufferings of the really poor of Vienna (everybody is poor in a greater or less degree) are best left to the imagination. They can buy neither food nor clothing, and though food-distributing commissions exist for their relief, the extent of the aid they can afford is hopelessly inadequate. It is impossible to walk down any of the principal streets of the city for more than a hundred yards without being solicited for alms. Many of the beggars are disabled Austrian soldiers; others are young hollow-eyed children in bare feet and tattered clothing, whose pinched faces tell their own tale.

The attitude of the people in the face of the serious economic difficulties which confront their country and threaten its very existence, is truly amazing. Though it must be obvious to them that the sole remedy for Austria's plight is work, hard work, and still more hard work, coupled with the most careful living, their sole concern seems to be to imagine the whole thing an evil dream from which they will one day awaken to find everything as it was before the war. They have lost all sense of the value of money, and those that can spend it like water without a thought for the morrow. The cafés and dancing cabarets are crowded nightly. The opera is packed full at every performance. Bolshevism does not appeal to the Viennese as a way out of their difficulties, though anything may be expected of a hungry people.

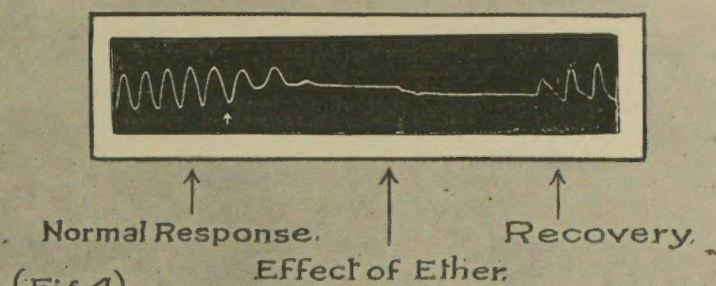
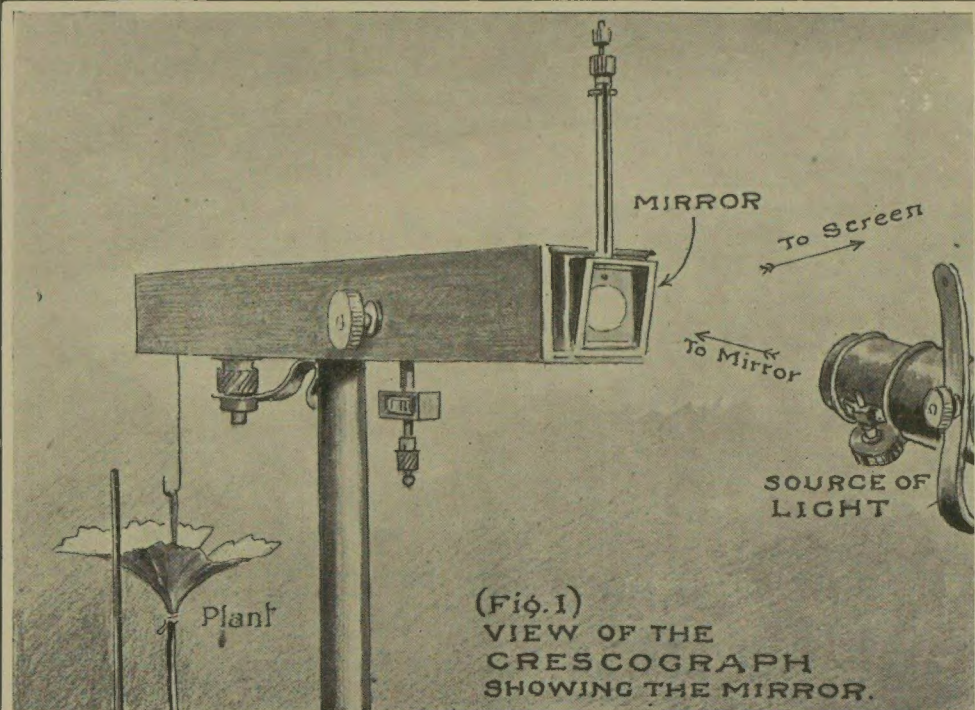
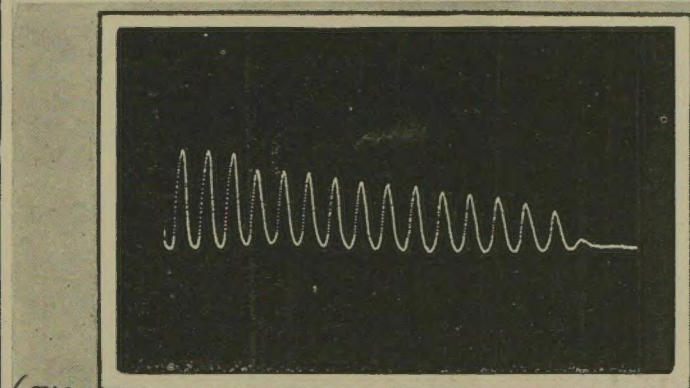
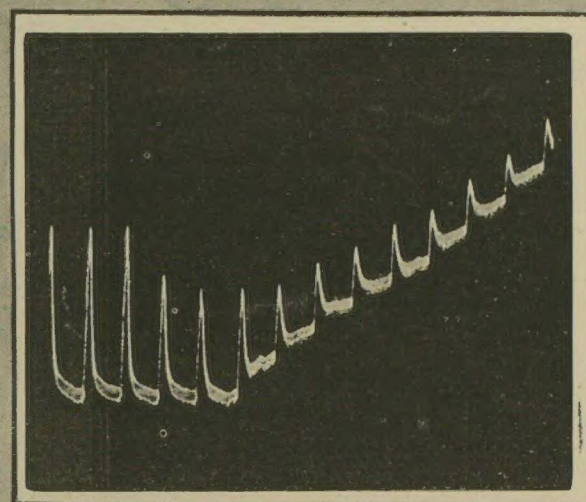
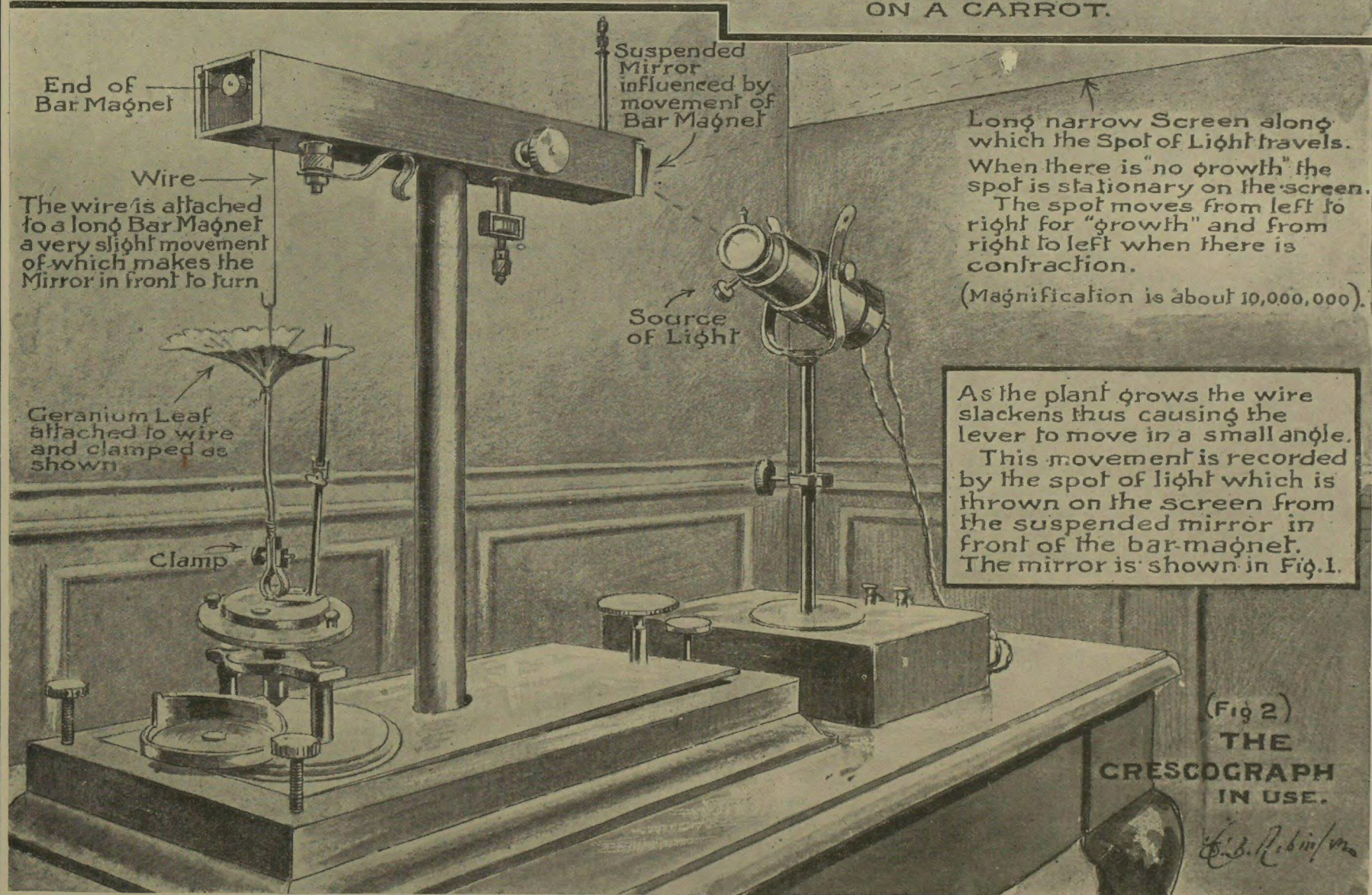
The prestige of the English has never been so high, and any Englishman travelling to the city is assured in advance of every kindness and consideration. He will be told repeatedly, of course, that Austria never had any quarrel with England, and all through the war secretly hated Germany.

In conclusion, it cannot be too strongly urged that in addition to supplies of food and clothing, one of the most pressing needs of Austria to-day is a strong Government. In any case, the country must in our own interest be helped to the best of our ability. If Vienna is left, as some people would leave her, to "stew in her own juice," she will collapse completely, and fresh and serious complications will be precipitated in Central Europe.

* Messrs. Longmans, Green, and Co.: (1) "Plant Response," (2) "Comparative Electrophysiology," (3) "Response in the Living and Non-Living," (4) "Irritability of Plants," (5) "Life Movements in Plants."

THE "SENSITIVE PLANT": AN INDIAN SCIENTIST'S RESEARCHES.

DRAWN BY W. B. ROBINSON FROM MATERIAL SUPPLIED BY SIR J. C. BOSE.

EFFECT OF ETHER ON A PLANT.
SHOWING STOPPAGE OF PULSATION,
AND REVIVAL AFTER BLOWING OFF
THE ETHER.EFFECT OF POISON
ON A PLANT.No Response.
Death of Plant.EFFECTS
OBTAINED BY
GALVANOMETER
RECORDS.EFFECT OF CHLOROFORM
ON A CARROT.

PLANTS AS SENSITIVE AS HUMAN BEINGS: SIR J. C. BOSE'S APPARATUS FOR MEASURING THEIR PERCEPTIONS.

A remarkably interesting demonstration on the perceptions of plants was given recently at the India Office by Sir Jagadis Chandra Bose, the Indian biologist, founder and director of the Bose Research Institute, at Calcutta. He has shown that plants are as sensitive in their way as human beings, and are even responsive to wireless communications. His methods and discoveries are described in an article on another page, which should be studied in conjunction with the above diagrams. Explaining one of the instruments here illustrated, the writer says: "The essential part of the Magnetic

Crescograph consists of a long magnetic lever. . . . A small movement of the free end of the magnetic lever causes a motion of the needle with its attached mirror. A beam of light is thrown on the mirror, and the reflected spot of light moves across the screen. Now, as the plant grows, the movement becomes highly magnified. If there is any growth in the plant, the spot of light moves across the screen in one direction; if the plant contracts under a shock, the spot moves in the reverse direction; on stoppage of growth, the spot becomes stationary."—[Drawing Copyrighted in the United States and Canada.]

AIR FOR TROUBLED WATERS.

By A. E. CAREY, M.Inst.C.E., F.C.S., F.G.S.

IN view of the movement in favour of decentralising manufacture and distribution, the revival or improvement of small harbours and roadsteads is urgently called for. There are many towns on the sea-board the future development of which would be greatly enhanced by the possibility of running into the sea a skeleton pier for discharge purposes, always provided proper shelter could be created in heavy weather. Not only would seaside places thus have the advantage of obtaining coal and building material more cheaply by means of water as compared with land carriage, but the provision of facilities for landing parties from yachts would be a feature of great value.

The whole trend of economic advance is that of removing factories and new industrial concerns from big cities, in order to plant them on virgin soil away

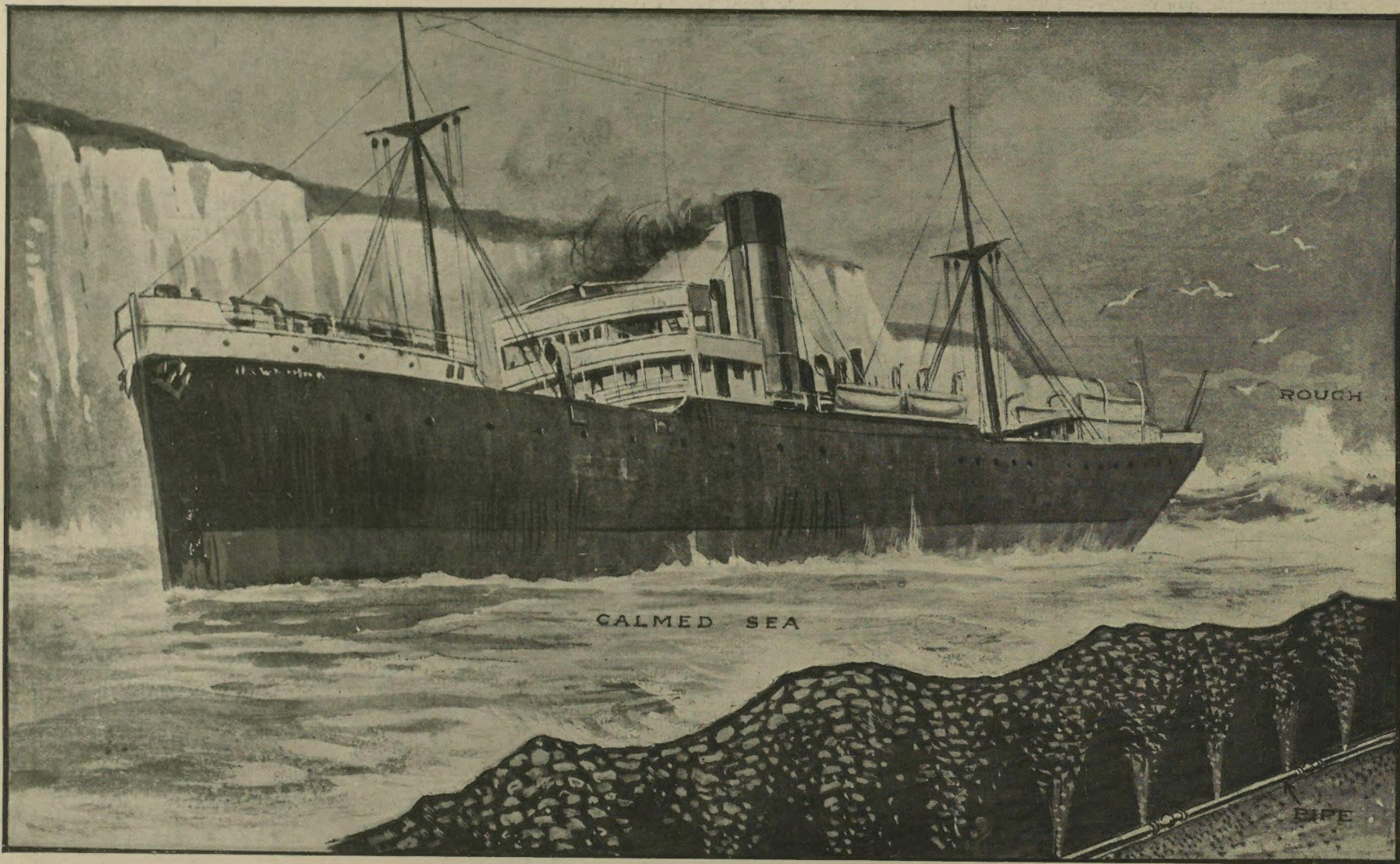
serviceable people), and shipping which they breed, as also the inhabitation of the frontiers. In this last age we have consented to see many of our useful ports run to decay, and at length to ruine, and to become totally lost to the nation; which a very little foresight, and as little charge, might have prevented, while the evil was growing, which, at a long run, becomes incurable.

Short cuts in harbour work are as a broad principle to be deprecated. Many ingenious devices have from time to time been evolved for securing protection from sea exposure, but have been found wanting in practice.

The Brasher Air Screen, however, has successfully stood the test of actual experience, and appears to be a coming expedient. The system is most effective in an oscillatory sea. It may perhaps be explained that there are two cardinal groups of waves: (a) oscillatory

sea of hauling or lifting the life-boat out of the water. It therefore frequently happens that the only course practicable is for the boat in such an emergency to make the nearest sheltered port. This may be scores of miles distant. The provision of a simple means by which a life-boat, perhaps laden with exhausted passengers, may return to her station would be an immense boon.

The Brasher Air Reef is simplicity itself. Put shortly, it effects its object by the expedient of forcing air under pressure through a perforated pipe affixed to the bed of the sea, the location of such pipe being designed so that it will render the greatest service in annulling the surface disturbance of the sea. Its practical effect is to force upward a sheet of air bubbles to the surface of the water. The impetus of an oscillatory sea is under the action of an air screen neutralised, and its



SCIENCE AS NEPTUNE STILLING THE WAVES: A STRANDED SHIP BECALMED IN HEAVY SURF BY MEANS OF THE BRASHER AIR SCREEN.

Virgil describes how Neptune put his head above the waves and stilled the raging seas round the ships of Aeneas. Science effects the same result by means of the Brasher Air Screen, explained in the article herewith and in the other illustrations opposite. The above diagram shows, in the right foreground, air rising through the water from a perforated pipe-line laid along the sea-bed. This air-screen checks the force of the waves and creates calm-water within it. The pipe, being at the bottom of the sea, does not impede navigation. Any sand that accumulates in it when out of use is blown out by the compressed air

Drawn by W. B. Robinson.—(Copyrighted in the United States and Canada.)

from congested centres of population. London, for instance, grows relatively greater as the money and trade centre of the world, less as a manufacturing area. Ship-building, which used to be an important industry in the River Thames, has for practical purposes ceased to be so. It is obvious that if a manufacturer can secure the site of his factory almost upon agricultural terms, and at the same time avoid the burden of heavy municipal taxation, he will be in a stronger competitive position, always provided equally good transport facilities exist.

The plea for the multiplication of small ports was insistent in Queen Elizabeth's day. Sir Walter Raleigh, in his "Discourse on Sea Ports," writes as follows—

Hereby sufficiently appeareth how incomparable jewels havens and sure harbours are, for gaining, maintaining, and encreasing people, wealth, and commodity, to any realm. And not lesser strength and security do they bring in time of war, as well by the multitude of mariners (a most

waves, and (b) waves of translation. The oscillatory wave is the open sea type. It is a carrier of force, the motion of the particles of such wave travelling in rolling circles, the movement of which at the top of the wave is onward, that at the trough of the wave backward, there being an absence of motion at half height. It is obvious that the shattering force developed by waves of this class necessitates formidable and costly structures to withstand its onslaught. If a simple and economical device could be adopted, by means of which practical tranquillity might be secured during rough weather, the advantages would be enormous.

The Life-boat Service may be instanced as a case in point. Life-boats are either launched from a slipway or the boat is lowered into the water. Self-propelling life-boats are now the order of the day. The difficulty often is that such a life-boat, having performed its function of rescue from a ship in distress, is unable to return to its station. There are no means in a heavy

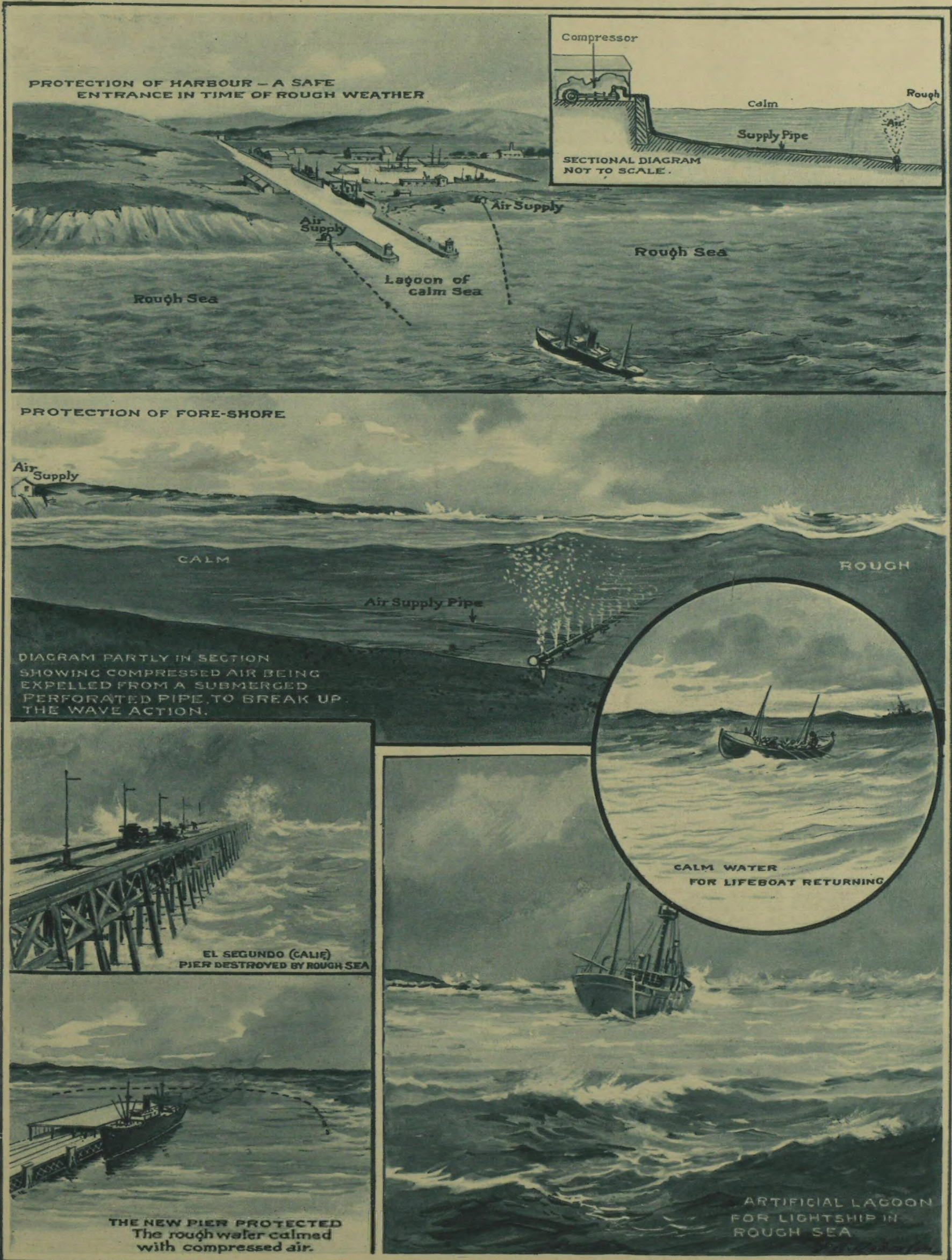
rolling motion rendered harmless. A ship entering a harbour protected by a line or lines of Brasher pipes is enabled to do so with safety. A light-ship or a light-house so protected would be immune from severe sea conditions; and for salvage operations it has proved of vital value. The report of an eye-witness of the salving of a steamer under the lee shelter of a line of Brasher pipes reads as follows—

The heavy breaking seas were powerless to pass the line of air. Before the air was turned on the seas were boarding the ship fore and aft, causing it to grind very much on the rocky bed, and making work very disagreeable. After the air was turned on in the breakwater, it was as though the ship was in a lagoon formed by the breakwater, while seas were breaking heavily outside.

It follows from the practical results now attained that there should be a great future for the Brasher Air Screen. There must be a vast number of localities on the English coast-line and in British colonies where the system might be employed to advantage.

AIR FOR TROUBLED WATERS: A DEVICE THAT MAY REVIVE SMALL PORTS.

DRAWN BY W. B. ROBINSON, FROM MATERIAL SUPPLIED BY MR. A. E. CAREY, M.I.C.E.



COMPRESSED AIR AS AN INVISIBLE BREAKWATER AGAINST STORMY SEAS: THE BRASHER AIR SCREEN—ITS VARIOUS USES ILLUSTRATED IN DIAGRAM.

Mr. Philip Brasher, an American engineer, has invented an apparatus, known as the Brasher Air Screen, consisting of pipe-lines, laid along the sea floor, through which compressed air is forced upward to the surface. The invisible barrier of air overcomes the force of the waves, and creates a lagoon of calm water in the roughest sea. How it is done is explained in the article on the opposite page. It would be particularly valuable in protecting small harbours, and thus distributing sea-borne traffic, and opening

up new and cheaper sites for manufacturing enterprises. It might also be applied to light-ships and life-boats, and to the preservation of foreshores exposed to coast-erosion. The Brasher Air Screen was first tried with success in guarding the Standard Oil Company's new pier at El Segundo, California, after half of it had been washed away. It was also used in salving the American steamer "Yankee," which grounded on rocks in heavy surf.—[Copyrighted in the United States and Canada.]

THE WORLD OF FLIGHT

FLYING TO AUSTRALIA: COMPETITION CONDITIONS.

By C. G. GREY,

Editor of "The Aeroplane."

IT has probably occurred to many of those who have followed with interest the progress of the various competitors in the flight to Australia, for the Australian Government's £10,000 prize, that their rate of progress was hardly such as to inspire enthusiasm for a postal and passenger service to India, the Far East, and Australia. The rules of the competition actually allowed thirty days in which to reach a point in Australia a good many hundreds of miles short of those normally reached by sea before the war in much about the same time. Therefore, the unthinking onlooker may very well come to the conclusion that there is no advantage in aerial transport as against water transport to compensate for the extra cost and risk. Hence it seems well to explain that the flights made in this competition bear no relation to the flights which would be made over the same course if it were organised as a regular air line. Perhaps the difference may be most easily understood if one compares the flying in the competition with a tour on horseback as against a regular line of mounted couriers riding in relays over short distances. Or perhaps it would be fairer to compare the competitors with the riders in one of those cavalry competitions which took place before the war—such as the famous ride from Berlin to Vienna, in which each horse and rider had to cover the whole distance without relief.

One would like it to be understood that this is in no sense an apology for aviation in general or for the Australian aviators in particular. It is simply an explanation of the difference between flying in a competition which is devised as a test of individual men and machines and flying on a regularly organised air route. Perhaps a certain amount of apology is also needed in that the distances covered in each day in the earlier portions of the journey were shorter than might have been reasonably expected. These short journeys have been due to the action of the Department of Civil Aviation and of the Committee of the Royal Aero Club, who between them arranged the regulations of the competition, in delaying the official date for starting until the weather became bad and the days grew short. The result of starting so late in the year may have been seen in the reports from Captain Ross Smith, the pilot of the Vickers-Vimy-Rolls machine. He and his crew flew through heavy rain practically all the way from England to Mesopotamia. He noted in his report that, after flying in heavy rain (the first of the year in that district) from Damascus to the battlefield of Ramadieh, the machine was nearly blown over by a gale in the night, and was only saved by turning out troops to hold it down. The next day, he remarked, was the first fine day of the whole journey.

The official reason given for fixing the start of the competition so late was to make sure that the competitors would arrive in the tropical zone of the route at a season when storms were rare and settled fine weather was almost certain. So far as the competitors were concerned, one gathers that they would rather have started when the weather, in our so-called temperate zone was more likely to be temperate instead of as boisterous as it was after they set forth. The bad weather in itself has delayed them very considerably, and has, one imagines, tired the pilots very much more

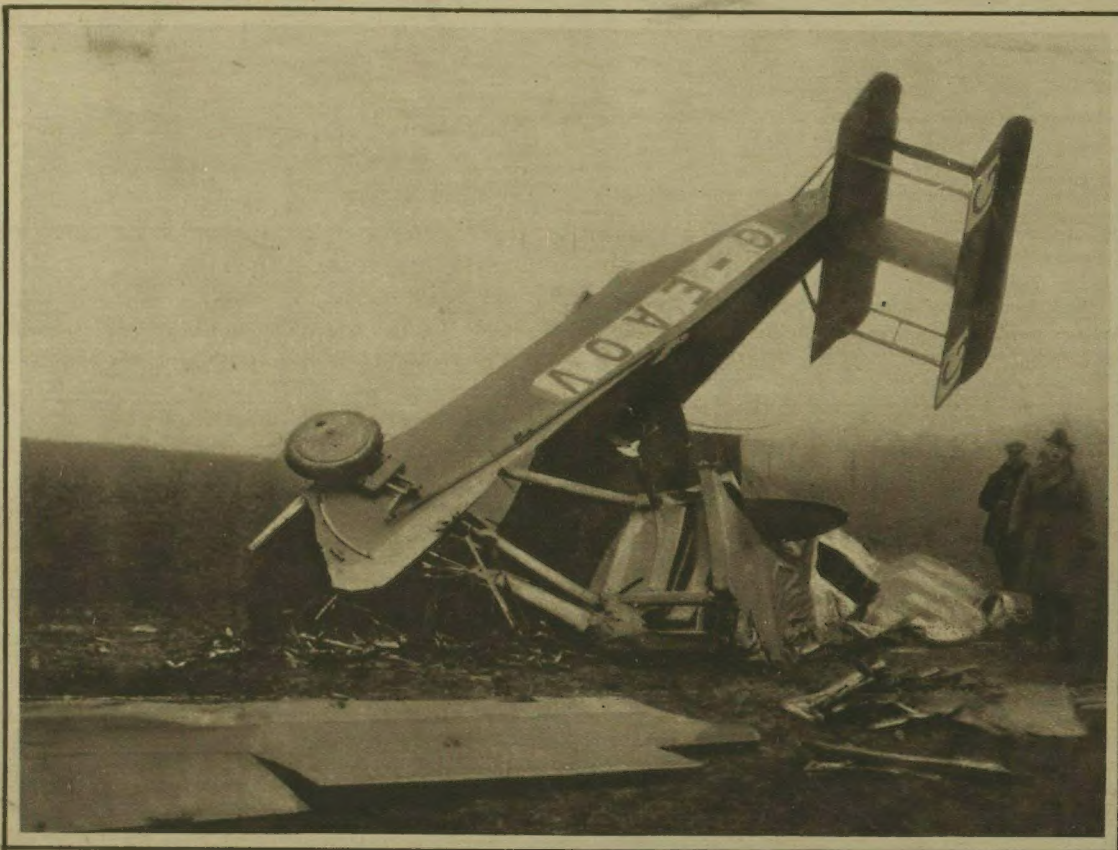
than if it had been fine; but the shortness of the days has delayed them still more, for it has entailed late starts and early finishes to the day's work. One recalls that before the war the late Brindejonc des Moulinais, on a little 80-h.p. monoplane, flew from Paris to Warsaw in one day; and that the German Suvelack, carrying a passenger, flew from Berlin to Bulgaria (1000 miles) without a stop. Also, late last summer, a French aviator flew from Constantinople to Marseilles with one stop (at Pisa) in the day. Consequently, such stages as London to Lyon, Marseilles to Pisa, Pisa to Taranto, Taranto to Crete, each taking a whole day, do not represent anything like what a pilot can do in a day, or what would have been done if the competitors had been able to start when there were twelve hours of daylight in the day instead of about six or seven.

The actual difference is much greater than it seems, for a competitor cannot simply go on flying till it is dark and then stop. He must stop for the night wherever

landing ground. One may take the London-Paris route as an example of the first stage of the London to Australia line, though probably the first stage would, in fact, be London to Lyon. As operated at present by the Airco Service, a pilot goes to Paris one day and back the next, and then he has a day or two days of rest. The Handley-Page pilots make the journey one day, rest a day, and come back on the third, the service each way operating at first on alternate days. During the day of rest the pilot's machine is inspected and retuned, if necessary, by skilled mechanics trained in the use of that particular machine and engine. Thus the pilot has no worry about keeping his machine in order, and the machine itself is never overworked and so is not likely to break down.

Under these circumstances, each stage can be flown at top speed with safety, as there is no need

for a pilot to "nurse" either himself or his engine. The result is a higher speed over each stage. At the end of the stage of four or five hours passengers and mails would be transferred to a fresh machine with a fresh pilot. Also, without doubt, the type of machine used on each stage would be that best suited for the country over which it had to fly. For example, from London to Lyon, Lyon to Rome, and Rome to Taranto fast land machines would be used. From Taranto to Palestine (probably the port of Beyrout) seaplanes or flying-boats would be used, for, though the machine would hardly ever be out of sight of land, very little of that land affords good surface on which to alight, whereas there are plenty of sheltered bays for sea-going aeroplanes. From the coast of Palestine across the desert to Mesopotamia it might be advisable to use land machines of a type specially suited for alighting on sand, and equipped with engines suited to the heat of the



THE END OF A FAMOUS AIRMAN: SIR JOHN ALCOCK'S MACHINE AFTER THE FATAL CRASH NEAR ROUEN. Sir John Alcock, of Atlantic flight fame, came down in a storm on December 18 while flying to Paris to attend the Aircraft Exhibition. The crash occurred at Cottevraud, twenty-two miles from Dieppe. He was carried to a farmhouse, and died before doctors arrived from Rouen. The machine was a combination of aeroplane and flying-boat.

Copyright Photograph by the "Daily Mail."

he can leave his machine with safety, and that may mean that, though he still has two hours or more of daylight before him, he may know that there is nowhere within two hours' flying where he can house his machine or leave it under guard. In the winter these circumstances may reduce his flying time to four hours or less in the day, whereas in the summer he can start at 4 a.m. and fly till 4 p.m., and then, according to where he finds himself, make up his mind whether to stop where he is for the night or go on for another four hours to the next good halting place. And in these modern machines, with two pilots and all the comforts of a home, there is no great strain about flying for twelve or even sixteen hours at a stretch, coming down every six or seven hours for more petrol.

So much by way of apology and explanation, as showing why less has been done than might have been done even when the same men and machines have had to go right through the journey from end to end. Let us, then, consider the very different circumstances under which a regular air line would operate. In the first place, every pilot would have his own particular stage of the journey, probably not more than 500 miles in length. He would know every mile of his route by heart, so that he would never lose his way even in bad weather, and would always be within reach of safe

climate. From Basra to Karachi seaplanes might again be most suitable, so as to avoid the risk of landing among hostile Arab or Pathan tribes. Across India land machines would again be used. And from Calcutta, across the top of the Bay of Bengal, down the Straits Settlements to Singapore, and across the Malay Archipelago to Port Darwin, seaplanes would certainly be most suitable. Thence land machines would be used across Australia as soon as aerodromes were prepared.

Passengers would probably be glad of a change from one machine to another after four or five hours' flying, and changing conditions on the route demand changes of type, just as engines are changed two or three times on the run to Scotland, to suit the variations of the road. The distance covered would probably be about 1000 miles a day, but some stages would perhaps be covered at night, so the daily average might be increased to 1250 or 1500 miles. Certainly some of the desert stages might well be flown at night, especially during periods when the moon was near the full phase. Thus there would be little difficulty in reducing the time from London to Melbourne to ten days. And in time, when the route is fully surveyed, organised, and lighted, so that all sections can be covered at night, the time may be brought down to five or six days.

Demolishing the Grand Fleet's Anti-Submarine Defences at Scapa Flow: H.M.S. "Sviatogor."



A RUSSIAN ICE-BREAKER NOW IN THE BRITISH NAVY: H.M.S. "SVIATOGOR," SALVED BY THE FRENCH AFTER BEING SUNK BY THE BOLSHEVISTS, BREAKING DOWN THE "HURDLES" AT SCAPA FLOW.

During the war, it appears, the Grand Fleet was efficiently protected against submarine attack at Scapa Flow by a line of iron trestles, known as the Hurdles, which formed an impregnable barrier in the water. Our photograph shows the work of demolition in

progress. The ship employed on this duty was H.M.S. "Sviatogor," an ice-breaker built for the Russian Government, and captured and sunk by the Bolsheviks. Later she was salved by the French, and has since been given to the British Navy.

A Flying "Pullman": A Luxuriously Appointed Aeroplane Interior Exhibited in Paris.



WITH ALL THE COMFORTS OF A PULLMAN CAR: THE TOILET ROOM IN A CAUDRON AEROPLANE.

An interesting feature of the Aeronautical Exhibition in Paris was a luxuriously fitted Caudron aeroplane for passenger traffic. As our photographs show, the accommodation provides all the amenities of a comfortable Pullman car. The interior of the body is



COMFORT AND TASTE IN A CAUDRON AEROPLANE: A WELL-FURNISHED AND DECORATED INTERIOR.

tastefully decorated and furnished, with arm-chairs, a small table, electric light, and leading out of it at the end is a toilet-room equipped with all the usual accessories, including a lavatory basin with hot and cold water.—[PHOTOGRAPHS SUPPLIED BY C.N.]

BOOKS OF THE DAY

By E. B. OSBORN.

TWO interesting books have just appeared, in each of which the story of an important war invention is humorously told. The humour in either case was provided by the authorities on the "Whitehall Front," who did everything in their power to hamper the inventors and prevent the creation of new engines of war. "TANKS: 1914-18" (Hodder and Stoughton; 12s. net), by Lieutenant-Colonel Sir Albert Stern, shows how even the influence of powerful politicians may be set at naught by the *vis inertiae* of a military bureaucracy. As a wealthy banker, with many friends in high places, Sir Albert Stern had great advantages in his campaign against departmental stupidity. Moreover, both Mr. Lloyd George and Mr. Winston Churchill (the latter, with all his faults, always welcomed new ideas, and need never be advised to pray for receptivity), caught the contagion of his untiring enthusiasm, and gave the designers and builders of a mechanism which practically obliterates fixed lines of defence a fighting chance of achieving their object. Yet they worked all the while in a resisting medium, to use the Clausewitzian phrase, and it was not until May 1918 that the Tank (a name devised to secure secrecy) assumed an effective form, which should have been reached two or three years before. Sir Albert Stern's book gives us a full account of the evolution of this armour-clad trench-crossing engine, from the embryonic "Mother" and "Little Willie" to Mark I. (with a tail), which went into action on the Somme in September 1916; to Mark IV., which set our church-bells ringing after Cambrai in November 1917; and to Medium Mark A and Mark V., which broke holes in the German lines in 1918. The author gives due credit to the men already known for the part they played in the making of the Tank, and honourably mentions many others who helped in a long and difficult task sadly impeded by "dug-ups" and other passive resisters. And the reflection that inevitably occurs is—Heaven help a Socialistic State, run by a huge bureaucracy, which was fighting for its life against an enemy that could still make free use of the individual's initiative and intelligence and imaginative power! Which is the moral, reiterated with a

stood by merchant seamen and not adopted until it was almost too late—must have been of far more consequence than those accruing from all the new mechanical devices used by us in the Sea Affair. In his preface to "THE PARAVANE ADVENTURE" (Hodder and Stoughton; 7s. 6d. net) the author, Mr. L. Cope Cornford, warns us to look at the work of Commander C. Dennis Burney's invention in the proper perspective as but one of the many factors in the successful defence of this island-fortress against an enemy who firmly believed that its huge garrison of workers and "useless mouths" could be starved out.



MISS BEATRICE KEAN SEYMOUR, WHOSE NEW NOVEL, "INVISIBLE TIDES," HAS JUST BEEN PUBLISHED.

Lieutenant Burney, as he then was, had personal advantages, when he began his self-chosen task of evolving the Paravane, of the same kind as Sir Albert Stern's. He was the son of a naval officer of high rank; he enjoyed the confidence of the energetic Admiral Sir Hedworth Meux; and he also possessed some money of his own. Moreover, he had invented the Burney hydro-aeroplane in pre-war days, and so earned a reputation as an inventor and experimentalist which could not be altogether ignored by Messrs. Dilly, Shilly Shally, and Dally, our typical bureaucrats. At the beginning of 1914 the official trial of his flying machine had been so successful that the local authorities at Pembroke were graciously directed by the Admiralty to render every assistance "at Lieutenant Burney's expense" in further researches and experiments. It was the loss of the three armoured cruisers, *Aboukir*, *Cressy*, and *Hogue*, in September 1914 by enemy submarine action which turned the young inventor's creative intelligence to the solution of the problem, How to keep a body containing the requisite explosive or appliance towing at a constant depth unaffected by any variation of speed or of helm. He solved the problem efficiently and expeditiously. He devised what was, in fact, a submarine aeroplane—a torpedo body, fitted with a plane, which would tow outwards from the ship's side and keep down below the surface at a depth unaffected by her speed. This ingenious invention was reported to the Admiralty early in February 1915, and a few days later two letters from that august entity were forwarded to the inventor for his instruction. Both bore the same date. One directed the Commander-in-Chief at Portsmouth to stop all experiments, and the other instructed the Captain of H.M.S. *Vernon* to go on with them. However, thanks to Sir Hedworth Meux, commonsense prevailed, and the first Paravane was evolved and proved a great success. It could be used either to destroy submarines or, when armed with a cutting appliance, to cut the moorings of submerged mines. When, tardily enough, the invention was adopted, the inventor was expected to start and conduct a vast technical and industrial enterprise, which eventually cost millions, in a cabin in the *Vernon* without modern business equipment or clerical assistance! However, he got what he wanted in the end; and once more the fine old crusted Admiralty rule that a young officer must do no thinking was honoured in the breach.

The radio-activity of the creative mind, though often reduced to utter impotence in departmental spheres, still has a fair amount of free play in the British industrial system. But even there individual inventiveness, to which we owe all our great industrial achievements in the further and nearer past, is being ground down between the upper millstone of Government control and the nether millstone of Trade Unionism. If the vast Nationalisation projects now being discussed and about to be pushed by a raging, tearing propaganda should ever be realised, it is clear that the whole life of the country, individual and corporate, will be at the mercy of the biggest bureaucracy history has ever known—and the bigger a bureaucracy is, the more soulless and mechanical are its methods. Manifestly the trend in this country is towards bureaucracy. In America, hitherto intensely individualistic, it is doubtful in which direction the change will be. But there are already unmistakable signs that Germany, now that the military class is discredited, is thinking of disestablishing the official caste. Indeed, within ten years we may expect to see her old policy of *Deutschland über Alles* translated into individualistic terms. If we became an unprogressive people, while the Germans work on the lines that brought about our great industrial expansion, what will be our final fate? Meanwhile, the fact that bureaucratic ideas have entered into the souls of all save the youngest German generation gives us a great initial advantage, if we will but use it aright. In "COMRADES IN CAPTIVITY" (Sidgwick and Jackson; 10s. 6d. net), which is a record of life in seven German prison camps by F. W. Harvey, that admirable soldier-poet, the difference between British and German mentality is shown in many humorous episodes. The inventiveness of the average Briton and his insight into the character of alien types with which he has to deal are brilliantly displayed in countless attempts at escape, whereof many were successful. The devices employed were often of extraordinary ingenuity—for example, one British prisoner got his opportunity of escape by turning himself into part of a bath-room tiled buttress by means of cards painted white. He knew that the average



GENERAL SIR GEORGE YOUNGHUSBAND, WHOSE BOOK, "THE CROWN JEWELS OF ENGLAND," HAS JUST BEEN PUBLISHED.—[Photograph by Russell.]

German would never notice the change in the size of the buttress. Niemeyer, the notorious bully in charge of the Holzminden Camp, boasting of the precautions he had taken, said to the interned officers: "Well, gentlemen, I guess you know if you want to escape you must give me a couple of days' notice." Two days after, twenty-nine British officers walked out through an ingeniously constructed and camouflaged tunnel, and ten of them got safely back to England. A century of bureaucratic rule has convinced the German that men's actions are governed by logic and so can always be predicated, which, as Jowett said, is not the case—except with German officials. There is much more of interest in Mr. Harvey's humorous and high-spirited book.



MR. JOSEPH HERGESHEIMER, WHOSE NEW NOVEL, "GOLD AND IRON," HAS JUST BEEN PUBLISHED.

journalist's pertinacity without any journalistic pulpwords, of Lord Fisher's surprising books—books which annoy the bureaucratic mind beyond endurance, but are rejoiced over by men of action and transaction.

There are very few landmen who have any definite idea as to the nature and use of the Paravane, and that, no doubt, is the reason why this mysterious weapon is supposed, on the general principle of *omne ignotum pro magnifico*, to have been the decisive factor in checking our shipping losses from enemy mines and U-boats. In point of fact, other inventions, such as the depth-charge and the hydrophone, were quite as important; while the results achieved by the convoy system—misunder-

WHERE RIFLE HAD TO REPLACE CAMERA: "RHINOS" THAT CHARGED.

PHOTOGRAPHS BY F. RUSSELL ROBERTS.



COVERED WITH SENTINEL RHINO-BIRDS: A BLACK RHINOCEROS NEAR AN EAST AFRICAN BATTLEFIELD BENEATH MOUNT KILIMANJARO.



"THE CAMERA HAD TO BE HURRIEDLY EXCHANGED FOR THE RIFLE": A BLACK "RHINO" LICKING THE SAP OF A PALM-TREE.

The country shown in the upper photograph lies at the foot of Mount Kilimanjaro, and is almost on the battlefield of Salaita. "This rhino," writes Mr. Russell Roberts, "was a particularly bad-tempered one. . . . He is seen here covered with rhino-birds, which act the part of sentinel, and give the alarm by flying up into the air screaming shrilly. The picture was taken before the birds were alarmed. But the sequel was fraught with excitement. He charged determinedly. I had one gun-bearer with me and we tried

shouting. This was a failure, and a bullet from the 470 cordite rifle failing to turn him, the left barrel completed the affair none too soon, the beast falling within nine feet. . . . The ivory nut palm exudes a juice which the rhino finds palatable. The one seen in the lower photograph was licking the trunk for a considerable time. This and other pictures were taken at such short range that he finally took offence. The camera had to be hurriedly exchanged for the rifle, with fatal results to the pachyderm."

BLACK AND WHITE: "RHINOS" OF TWO KINDS IN THEIR NATIVE HAUNTS.

PHOTOGRAPHS BY F. RUSSELL ROBERTS.



DIFFERING FROM THEIR "WHITE" COUSINS BY THE YOUNG RUNNING BEHIND INSTEAD OF BEFORE: A BLACK COW AND CALF.



BIGGER THAN THE "BLACK" VARIETY, AND ONCE BELIEVED EXTINCT: THE "WHITE" RHINOCEROS—AN OLD BULL, PHOTOGRAPHED AT 20 YARDS.

"The rhinoceros of Africa," writes Mr. Roberts, "have two horns and none of the armour-plated appearance of some Asiatic varieties. They are of huge size, and must breed very slowly, as the cows are frequently accompanied by young ones of certainly several years of age. The upper photograph shows a case in point—a calf almost as big as its mother. The black rhino, which is very little darker than the white, is a bush feeder, whereas the latter eats grass. In the black race the young run beside or

behind the mother, and in the white, they run in front. The white, or square-mouthed, rhino was believed to be extinct until some years ago. . . . It is bigger than the black, and the old bull seen in the lower photograph probably stands nearly six feet at the shoulder. . . . This old bull was entirely unsuspicious; and though I took several photographs of him, some under twenty yards' distance, he finally settled down under the tree on the right, and I left him sleeping peacefully."

THE "HIPPO" AT HOME: SNAPSHOTS OF TRUCULENT "SITTERS."

PHOTOGRAPHS BY F. RUSSELL ROBERTS.



"DISTINCTLY DISTURBING TO THE PHOTOGRAPHER ON THE BANK": A TRUCULENT HIPPOPOTAMUS IN THE GAMBIA RIVER, SENEGAL.



AN AQUATIC "CARPENTIER" IN A FRIENDLY BOUT: A PAIR OF "HIPPOS" IN THE WATER "MAKING GREAT BITES AT ONE ANOTHER."

The upper photograph was taken on the Gambia River, in the French West Coast Colony of Senegal. "It shows," writes Mr. Roberts, "an old bull wondering whether it is safe to be truculent or whether it would be better policy to put his head under water and run no risks. As I sat waiting in the shade of a tree on the steep bank, the hippo was unable to make out exactly what I was, as I kept perfectly still. He accordingly assumed a threatening attitude, which was distinctly disturbing to the photographer on

the bank, as, what with the mud and the steepness, retreat was difficult. However, the hippo contented himself with keeping a close watch." Regarding the lower photograph, Mr. Roberts writes: "Whether this is a battle going on or only play, I am not prepared to say. But they made an interesting spectacle, skirmishing around in the water, and making great bites at one another. The broad grins on their faces suggest good temper, and the lack of serious wounds and bloodshed points merely to a sham fight."

AN ISLAND OF "HIPPOS": THE AFRICAN RIVER-HORSE IN HIS FAMILY CIRCLE, WITH RHINO-BIRDS AS SENTINELS.

PHOTOGRAPH BY F. RUSSELL ROBERTS.



HIPPOPOTAMUS IN MASS FORMATION: A PHOTOGRAPH VERY DIFFICULT TO OBTAIN Owing to the animals' extreme suspicion and quickness to scent danger.

Our readers will remember Mr. Russell Roberts' wonderfully interesting photographs of African elephants in their native haunts, given in our issue of December 27. Those in the present number (on this and three other pages), showing the hippopotamus and rhinoceros at home, are no less remarkable. They were taken by Mr. Roberts under circumstances of equal difficulty and danger. "It is not often," he writes of this photograph, "that one is able to get a close view of hippopotami lying in masses. They require to be entirely undisturbed and unsuspecting before they will relinquish their usual caution and, giving up all thoughts of danger, lie sleeping in family heaps. They

are protected by a few rhino-birds, which can be seen seeking an insectivorous diet on their recumbent hosts. Once, however, they had discovered my presence, they never again presented the same opportunity. For days I stalked them in vain, and only after an absence of weeks did I again find them in massed formation. Even then they were suspicious, and I never got the same chances again." As in the case of the rhinoceros (shown on another page), the rhino-birds act as sentinels, and give the alarm by flying up into the air with shrill screams on the approach of an intruder.

Under Bolshevist Rule: V. My Escape.

By PAUL DUKES.

"IVAN Pavlovitch," said my companion, "have you seen the notice in the paper?" We were travelling up the Neva in one of the little river steam-boats. I was nominally employed at that time as a designer in a small munition-works some distance up the river. My companion, Sergei Ilitch, was my manager.

"About the mobilisation?" I queried. "Yes, I have."

Sergei Ilitch removed his hat and crossed himself as we passed the Smolny Cathedral. "You must look out," he said. "What are you going to do? I must speak to Vasili Petrovitch. You ought to join up at once, before—"

"Yes," I agreed. "I do not want to be sent to the eastern front."

As I sat in Sergei Ilitch's room I examined the paper again. "Those born in 1889, 1890, and 1891, and exempted hitherto as working in Soviet institutions, to appear for medical examination on Monday, 2 June."

Sergei Ilitch was one of my best friends. He had put me up many a time when I used to change my lodging every night. One day he whispered to his little daughter, "Ivan Pavlovitch has come from England," and added cautiously, "but you must not say that to anybody"; and she used to stare at me when I came in, with big round eyes, and say, "Good evening, Ivan Pavlovitch; have you come from—?" And I used to check her, and say, "Hush, hush, little one. Yes; but not only just."

Then Sergei Ilitch took me to his works, and when I said I could do that sort of work he said, "No, no; I will say you do the work at home." So I only used to go and sit with him sometimes in his little office.

Vasili Petrovitch was commander of a special unit stationed near Petrograd. He and Sergei Ilitch were great friends, and Vasili Petrovitch did almost everything Sergei Ilitch said.

I saw Vasili Petrovitch was a little afraid when I asked him to enlist me in his regiment, but he agreed none the less. Next day Sergei Ilitch brought me the papers, signed by himself and the Commissary of the works, saying I was transferred from the munition-works to such-and-such a regiment as a volunteer. When I went down to report I donned my Red Army uniform, consisting of a khaki shirt, yellow breeches, puttees, a pair of good boots which I bought from another soldier for 350 roubles (the army was not issuing boots then), and a grey army overcoat. On my cap I wore the Red Army badge—a red star with a hammer and plough imprinted on it. It is lying on the table here as I write.

We used to get a pound and a half of bread daily, and small weekly rations of fish, sugar, oil, and sometimes meat, kasha, and butter. These supplies were made into our dinner and supper, which were generally soup. We also got tea sometimes. Our Commissary often used to get potatoes and extra sugar for us. The private soldiers got 350 roubles salary a month, with which they used to go out and buy milk from the peasants.

There was one time in July when our food ran quite out except for bread, and for some days everybody was hungry and scoured the country round for something from the peasants. But when there was a food crisis in Petrograd the peasants used to hide their food from the soldiers for fear of requisition. So the Commander and Commissary set out post-haste for Novgorod, where the Seventh Army H.Q. then were, and, being on good terms with a certain influential person there, got special supplies sent, and the fellows ceased grousing.

There was a reading-room in the villa where we were billeted. Nothing but Communist literature was to be found there, and the daily papers. Nobody read the literature, and it was very rare that anyone read the papers. I think this is so in most regiments. Large consignments of *Pravda* and *Izvestia* are sent to the army, but they are not read except by the Communists. In

one regiment on the Finnish front the soldiers said they liked the papers because they must have something to wrap herrings up in. In the way of propaganda I saw much more interesting things in other regiments where I had friends whom I visited. I have been to several concerts and dramatic evenings which were really quite interesting. Agitators always spoke, and the rooms were decorated with portraits of Lenin, Trotzky, and Zinovieff.



AS HE REALLY IS: MR. PAUL DUKES, THE AUTHOR OF OUR ARTICLES ON LIFE UNDER THE BOLSHEVISTS.

My Commander detailed me off to Petrograd as often as I liked, and I only came down to the regiment to report from time to time for the sake of appearances. Before other people I called him "Comrade Commander," and he called me "Comrade Pavloff." I would say, saluting, "Comrade Commander, allow me to inform you that the task allotted is performed." But when we



AS HE APPEARED WHEN LIVING IN RUSSIA: MR. PAUL DUKES AS A SUBJECT OF THE BOLSHEVISTS.

were alone I would say to him quietly, "Vasili Petrovitch, I would like to have my papers renewed. Tomorrow I want to go to Sestroretzk, and the day after out on the Schlüsselburg railway. And next week I should like to go to Moscow." And he would supply me with papers.

One day I said to him, "Vasili Petrovitch, I want to go back to my homeland. Will you help me?" "Well," he laughed, "I can't give you papers to go to London, you know. But—but I will permit you to desert." "All right," I replied, "I will break my oath to the Soviet Power. I leave the plans to you."

Thus it came to pass that on the evening of the last day of August this year I set out from Petrograd with two companions, detailed off to join an artillery brigade on a distant portion of the front. The front may have moved now, but I still prefer not to mention the names of places. My companions belonged to another regiment, but were transferred for this occasion to mine. They had long since wished to join the Whites, but were afraid they would be shot, for they were both Communists. I promised I would take them with me when I went.

The first night we travelled in the lobby of a railway carriage in which there were nine other people besides ourselves. The train was already packed when we got on. People were even sitting on the buffers and on the roofs. Having some muscle between us, we took the steps of one carriage by storm and held on tight. I was the fortunate one on top. In about an hour after the train had started I succeeded in forcing the door open sufficiently to squeeze half in. My companions eventually smashed the window, and, to the horror of those inside, climbed through it and wedged themselves downwards. Treating the thing as a huge joke, they soon overcame the violent verbal opposition. When I got the other half of me through the door it shut, and we breathed again.

Next day we slept out on the grass at a junction station. The second night's journey was to take us to the place mentioned on our papers. About a mile before reaching it we jumped off the moving train and ran into the woods.

Dividing Russia from Esthonia and Lettland there are a number of lakes, which during the summer marked the Russo-Lettish front. Round them the land is very marshy. The bogs are marked on the map "impassable." It was for one of these lakes we were making.

There were two outposts stationed on the shores of the lake. We had to avoid them somehow. We had driven a long way in a peasant's cart, and our papers were no longer valid. We were obviously deserters. We had told the peasant we were "Greens," and he had let us sleep in his hut and given us bread and milk. We climbed out of the cart, and the peasant drove off home.

It was two miles yet to the lake, and there was only one road, straight and open. In the woods at the end of it there was an outpost of forty men, and horse soldiers rode up and down it from time to time. We ran the straight piece of road, which was half under water, and slipped into the woods again. Five minutes later, a patrol rode out on to the road in the opposite direction. When we got near the shore we lay low till after dark, and then started to walk round the lake. It was a long way, for the lake was sixteen miles in length and ten across. We could not walk in the woods, as it was pitch-dark, so we had to wade through the bogs on the shore. At every step we sank half-way up to our knees, and sometimes were nearly waist-deep. After about three hours, when I was beginning to think that the happiest thing I could do would be to lie down and drown, we found a castaway fishing-boat in the rushes. It was a rickety old thing, and it leaked dreadfully, but, after one or two tentative attempts, we found it would hold us if one man bailed all the time. So we cut some branches for oars, and rowed over the lake to Lettland.

The sun rose gloriously when we were out in the middle of the lake. Away to the north the guns began booming. My companions were happy, and they sang as they punted and bailed. But I was meditating on the land I had left. And as I sat at the end of the boat and worked my branch I looked back and thought of Russia, and of how—and when—I should return.

NEMESIS IN AUSTRIA: VIENNA'S FAMOUS PARKS SHORN FOR FUEL.

Drawings by KARL HORNSTEIN, VIENNA.



1. HAVOC IN THE WIENERWALD: A WOODED HILL COMPLETELY SHORN OF TREES—VIENNA IN THE DISTANCE.

3. VIENNESE HELPING THEMSELVES TO FUEL IN THE FAMOUS PRATER: DEVASTATION WHICH THE AUTHORITIES CANNOT PREVENT.

We publish this drawing just as it reached us from an artist in Vienna. The terrible conditions there have been described recently by Sir William Goode, the British Director of Relief, and also by the Austrian Chancellor, Dr. Renner, who has been to Paris to put the Austrian case before the Supreme Allied Council. Interviewed in Paris, Dr. Renner said, among much else: "Beautiful woods which have been the pride of the Viennese have, in spite of all protective measures, been devastated by people in search of fuel, so

2. A FATAL ACCIDENT IN TREE-FELLING: AN OCCURRENCE FREQUENT THROUGH HASTE AND INEXPERIENCE.

4. HOMEWARD AT EVENING: FUEL-GATHERERS CROSSING THE KAISER JOSEF BRIDGE TO THE POOR QUARTERS OF VIENNA.

that now only about one tree in three of that great nature park remains." The Allied Council, among other decisions, ordered 30,000 tons of grain to be sent into Austria. The British Government authorised Sir William Goode to supply £260,000 of fats to Vienna, and three shiploads of coal. Italy and Holland are also giving generous aid. A fund for the Starving Children of Europe is supported by the Archbishop of Canterbury, Cardinal Bourne, and Earl Haig.—[Drawings Copyrighted in the United States and Canada.]

THE IMMORTAL HEROINE OF THE GLASS SLIPPER. THE FINALE OF "CINDERELLA" AT DRURY LANE.

DRAWN BY OUR SPECIAL ARTIST, STEVEN SPURRIER.



THE DRURY LANE PANTOMIME: CINDERELLA'S TRIUMPH IN THE LAST SCENE, THE "TRIAL OF THE SLIPPER."

Drury Lane has once more lived up to its great reputation in this season's pantomime, "Cinderella," by Messrs. Frank Dix and Arthur Collins, with music by Mr. J. M. Glover, and songs by Messrs. R. P. Weston and Bert Lee. The scenery and costumes are as gorgeous as ever, and both the sentiment and the humour of the story are in excellent hands. Our illustration shows the final scene, the Trial of the Slipper. The principal characters in front, reading from left to right, are: Mr. Robt Gilmore as Jeff; Mr. S. J. Chapman as Mutt; Mr. Harry Claff

as Baron Beauchamps; Mr. Stanley Lupino as Pipchin (the Baroness's new servant); Miss Marie Blanche as Prince Charming; Miss Florence Smithson as Cinderella; Mr. Du Collon as Dandini (standing); Mr. Will Evans as Baroness Beauchamps; and Mr. Denier Warren and Miss Lily Long as Minnie and Maxie, the Ugly Sisters. The costumes for the Ball scene were in the Pompadour style of the Louis Quinze period.—(Drawing Copyrighted in the United States and Canada.)

CONCERNING A LAND DRAGON.

By W. P. PYCRAFT.

A LITTLE learning is a dangerous thing. And when that little grows to more, it becomes disconcerting, as, for example, when it reveals opportunities missed. A case in point is furnished by the highly coloured tale we have just been told of a strange monster which has been capering about the forest in the Belgian Congo. We were assured that it was a "Brontosaurus." Yet it bore not the slightest likeness to that wonderful beast, for this had a long neck, and a ridiculously small head. But, ready to the hand of these would-be Natural Historians was—an "Ornithopodous Dinosaur," known as Triceratops.

What manner of beast he was may be seen at a glance in the accompanying illustration, and much of his history was told long since in that fascinating book "Extinct Monsters," by the Rev. H. N. Hutchinson. That there is at least a family likeness between this beast and the miscalled "Brontosaurus," there is no gainsaying. The likeness, however, can be but accidental, for not only was Triceratops a native of America, but he was also the last of his race, which apparently came to an end through over-specialisation. In other words, it over-reached itself in the matter of armour-plating. This became so cumbersome as to fail of its purpose, which, it is assumed, was to protect itself from its arch-enemy, the huge carnivorous dinosaur, Ceratosaurus, by which it was, according to some authorities, constantly beset. Ceratosaurus was a giant which stalked about the land on its hind-legs, and carried a formidable armature of teeth.

Without doubt the most striking feature of Triceratops is its head, armed as it is with very business-like horns, and an enormous buckler, or shield, sweeping backwards over the neck, and thereby nearly doubling the apparent size of the head. The horns of the living animal were much larger than they appear in the fossil remains; for they were ensheathed in horn like those of oxen; while the edge of the great head-shield was studded with horny bosses. The front

of the jaws was encased in horn, as with the tortoises of to-day, but behind this "beak" was a series of large teeth, adapted for the mastication of herbage—for Triceratops was a vegetarian, in spite of his aggressive appearance. His hide was almost as well protected as his head: being studded with bony nodules forming rosettes, instead of being arranged in rows of quadrangular plates to form bucklers for the back and belly, as in the crocodiles and alligators of to-day.

It is legitimate to speculate as to the colouration of Triceratops, for the reptiles of to-day are sometimes as variegated as the rainbow.

Was the hide of this leviathan "protectively coloured," then, after the fashion of a zebra, or "warningly coloured," with great blotches of red and black, like that of the living heloderma lizard? Was it grass-green, like that of many snakes, or clay-coloured, like that of the elephant? But, though large pieces of its skin have been preserved, we can glean nothing therefrom as to this matter of colour; hence we may have it as we will! As touching the size of this creature, estimates vary; but, in bulk, if not in height, he considerably exceeded the elephant, having a length of some five-and-twenty feet, and a weight of ten tons.

The formidable armature of this old-time dragon recalls that of the ruminants and rhinoceroses of to-day; and it may have been used, therefore, not merely for defensive purposes, but also in settling disputes between rivals during the courting season. They would have been thrilling moments if one could have watched two of these monsters, infuriated by jealousy, contending for the possession of the same prospective mate, when—

In the spring this giant's fancy
Lightly turned to thoughts of love!

Think of the bellowing charge, and the clash of impact! That such battles did indeed take place seems to be

shown by the fact that, in the United States National Museum, there is a skull in which one of the horns has been broken off midway between the tip and the base. That it was broken off during life is proved by the stump, which had healed up and rounded off; showing that the owner survived long after the battle, which, perchance, he lost to a younger rival. The breaking of the horn may have been due to a loss of vitality in the bone.

Save during this period of throbbing activity, Triceratops probably led a life as sluggish as that of a tortoise; for imagination was certainly denied him. And this because he had no brain to speak of. It was, indeed, so incredibly small that, as Sir Ray Lankester remarks, it could have been passed all along the canal in which the spinal cord lies, and was, in proportion to the size of the body, a tenth the size of that of a crocodile. In this matter, however, this ponderous beast was no worse off than others of these old-time giants: and it may well be that they owe their extinction to their dull-wittedness. They were outdone in the struggle for existence by the advent of new races smaller than themselves, but with far bigger brains, which afforded the consequent advantages of cunning, and general educability. Then, as now, brain scored over brawn.

Did Triceratops lay eggs, as do most reptiles; or was it viviparous, as are some lizards, for example? We have no means of deciding this question; but it is probable that the young were produced alive, as they were, indeed, in the case of the old sea-dragons—the ichthyosaurs and plesiosaurs. That any of this ancient race have survived till to-day is in the highest degree improbable. And even if they have, they would not be found in Africa, for Triceratops and his near relations were North American products, though other types of dinosaurs lived in the Old World. Some, indeed, invaded what are now the southern confines of Great Britain.



MORE LIKE THE CONGO HOAX MONSTER THAN WAS BRONTOSAURUS: THE HORNED DINOSAUR, TRICERATOPS—A RESTORED PLASTER MODEL. This restored model in plaster of the skeleton of a three-horned dinosaur, Triceratops, was made from bones found in the Laramie Formation of the Cretaceous strata in Wyoming, U.S.A. The original is in the National Museum at Washington. The total length is 19ft. 8in.; length of skull, 6ft.; and height at loins, 8ft. 2in. A reconstruction drawing of Triceratops in his native jungle is given on the opposite page.
By Courtesy of the American Museum of Natural History, New York.

NOT A HOAX: TRICERATOPS—A REAL “DRAGON OF THE PRIME.”

A RECONSTRUCTION DRAWING BY A. FORESTIER FROM THE SKELETON SHOWN ON THE OPPOSITE PAGE.



THE NEAREST REAL PREHISTORIC ANIMAL ANSWERING THE DESCRIPTION OF THE MONSTER (DESCRIBED AS A BRONTOSAURUS)
SAID TO HAVE BEEN SEEN RECENTLY IN THE CONGO: A TRICERATOPS.

The recent circumstantial accounts from the Belgian Congo of a Brontosaurus, believed to be a prehistoric survival, turned out to be an elaborate hoax, as was suggested by Mr. W. P. Pyecraft in our issue of December 6, when the first story was being circulated. It was followed shortly afterwards by another emanating from the same region. A tragic incident occurred in connection with the matter, for a party of American zoologists sent out by the Smithsonian Institution to investigate the affair were involved in a railway

accident in which several persons were killed. In his article on the opposite page, Mr. Pyecraft describes another prehistoric animal, the Triceratops, which answers the description of the alleged monster of the Congo far better than the Brontosaurus, which had a long neck and a small head. Triceratops, however, was a native of America. Our artist, following the restored skeleton shown in the photograph opposite, represents him in his native haunts.—[Drawing Copyrighted in the United States and Canada.]

LADIES' NEWS.

THE best New Year's news for ladies will be those of the sales. These promise to be of exceptional interest, for the prices are most favourable—more so than for six winters. I will begin with some of those offered by so noted a firm as that of Marshall and Snelgrove, which has a world-wide reputation for quality and up-to-date style and satisfaction to all clients. Dainty dance gowns for 6½ guineas to 8½ guineas will be much in demand during this three weeks of exceptional opportunity beginning on Monday. These desirable dance gowns are in rich soft crêpe-de-Chine, and have simple cross-over bodices finished at the waist with feathers of contrasting colour, the skirts well cut and well draped. Needless to say how much more these would cost in the ordinary way. A simple and graceful afternoon gown in navy-blue or black suiting-serge, with braided cuffs, and also on the large outside practical pockets—just the right thing for a young girl—is to be offered at 6½ guineas. For young ladies, married or single, crêpe-back satin gowns, very smart, novel in design, and handsome, are marked down to 9½ guineas. Handsome French tea-gowns and rest-gowns in classical style, made of satin georgette and other handsome fabrics, will be sold for 10½ guineas, and look worth £25. There is fine value in "nighties" of good lawn round the neck and sleeves at 12s.; others of Jap silk, trimmed at the neck and sleeves with lace, are marked down to 35s. 9d. Tea-gowns in crêpe-de-Chine Faconne, slipping over the head without any irritating fastening, will be offered in all the newest shades at 48s. 6d. These few items will only indicate the character of reductions which will be found in every department of this justly celebrated house.

There will be the usual rush to the world-famed house in Knightsbridge known *tout court* as Harrods when their one-week's sale begins on Monday. Only from their own stock of reliably first-rate things is this sale furnished, and the reductions in every department are on a scale even more generous than usual. The house-mother who wants to have pretty rooms in this New Year will be glad to hear that heavy repp cretonnes in lovely designs are reduced from 3s. 11d. to 1s. 11½d. a yard; and there are lovely curtains which were 8s. 11d. and will be offered for 6s. 11d. An excellent investment, too, will be shop-soiled soap, as good as ever it was—better, indeed, because matured—to be sold, 1 to 7 lb., at 1s. 8d. a lb., up to 57 lb. at 1s. 6½d. a lb.; all soaps are much reduced. Harrods' dress department has won so good a reputation



THE RETURN OF THE DOLMAN.

We are nothing if not eclectic these days, and we do not only go back to the eighteenth century—our grandmothers' fashions are also the vogue—but with such a difference! As an example, take this dolman worn with a striped tweed skirt.

that clothes from Harrods carry a cachet as characteristic as gloves from France. A charming afternoon gown in soft satin, with panels and vest of georgette embroidered in gold, in several favourite colours, will be sold for 9½ guineas, and looks worth £20. There are bargains in Harrods' noted furs, than which none are better—such, for a solitary example of scores of them, as a coat, three-quarter length, of seal cone, with kimono sleeves and new roll-collar, for 27 guineas. In skirts the variety of choice is as pleasing as the sale slump in prices; and in hats, boots, and shoes—every department, in fact, of these mammoth and perfectly managed stores—it is reduction, reduction everywhere, and, to paraphrase the Ancient Mariner, not a high price to pay.

The big winter sale at Robinson and Cleaver's world-famous Linen Hall in Regent Street took time by the forelock and started on Wednesday in this week, so is now in progress and will be throughout this month. There will be plenty of bargains, although naturally in some instances earlier clients get the best. In beautiful Irish table linen the firm is able to give exceptional value because it purchased largely before the advance in prices, from which forethought their customers now reap the benefit. Beautiful quality and in lovely Empire design are pure linen table-cloths, two by two, at 31s. each, and larger sizes at proportionate increase in price. Hem-stitched linen sheets, two by two, 97s. 6d., and larger as required; embroidered linen bedspreads at 72s.; lace and embroidered table-centres and mats, the sets of twenty-five pieces for 69s. 6d.—are among the good things offered. Irish dress linen, uncrushable, and thirty-six inches wide, in many beautiful shades, and not to be found elsewhere, is offered at 3s. 9d. a yard, while its real value is 4s. 11d. There are many other bargains in first-rate quality fabrics. Casement cloth, forty inches wide, in all colours, will be sold at 1s. 9½d. a yard, while it is well worth 2s. 6d. A cosy quilted dressing-gown of Jap silk, lined with silk, is offered for 29s. 6d., and is in a variety of good colours. There are bargains in underclothing and in pyjamas for both sexes. Some in pink, white, and blue silk are being sold at 37s. 6d. which were 59s. 6d. The firm is celebrated the world over for handkerchiefs, and offers remarkable value in them during the sale. The same may be said of every department in this great house.

The well-known house of Burberrys, in the Haymarket, at one time almost gave up hope of holding their annual winter sale because of the deplorable conditions of the tailoring trade and the state of the textile market.

(Continued overleaf.)

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Lotus

IT had been a wet day on the links and the club-house of the Ancient and Royal Borough was full of the smell of steaming Harris tweeds and wet leather.

"But my socks are dry," said the ex-Major proudly. "I'm wearing my trusty old campaigners, you see, my Lotus service boots that kept me as dry as a bone and as fit as a fiddle out in Flanders."

"Mine are Lotus too," observed the ex-Captain.

"Not a bit of it, my dear chap. Yours look quite different. Where's that apron thing in the front? You've been taken in. These can't be Lotus at all."

Lotus Ltd, Stafford

Makers of Lotus and Delta Boots
Agents everywhere

"Excuse me—but they are. I believe this is the latest development of the Lotus welted-veldtschoen—I can't explain it technically—never can get my tongue round all those trade terms though they are interesting enough, but I can show you the results. See my socks. They are every bit as dry as your own."





WARING & GILLOW'S SALE of LINENS and DRAPERIES JANUARY 5th to 17th. LINEN BARGAINS.



SHEETS.

Superfine Quality Hemstitched Longcloth Sheets, as illustrated.

Size 2 by 3½ yds.
Usual price 49/6
Special sale price 39/6 pair.

Size 2½ by 3½ yds.
Usual price 60/-
Special sale price 49/6 pair.

500 Pairs Hemmed Cotton Sheets plain or twill.
Size 2 by 3 yds.
Usual price 27/6

Special sale price 21/6 pair.
Size 2½ by 3½ yds.

Usual price 39/6
Special sale price 31/6 pair.

240 Pairs Hemstitched Fine Longcloth Sheets.

For Single Beds—
Usual price 39/6

Special sale price 29/6 pair.

For Double Beds—
Usual price 49/6

Special sale price 39/6 pair.

Christy's Large Size Bath Sheets. Usual price 15/6

Special sale price 12/9 each.



TOWELS.

160 Doz. Fine Hemstitched Huckaback Face Towels with Damask Borders, as illustrated.

Size 18 by 33 ins.
Usual price 39/6
Special sale price 29/6 doz.

BEDSPREADS.

Imitation Filet Lace Bedspread. Size 85 by 95 ins.

Usual price 25/6

Special sale price 21/6

Irish Embroidered Cotton Bedspread

Size 72 by 90 ins.

Usual price 33/6

Special sale price 29/6

Size 80 by 100 ins.

Usual price 37/6

Special sale price 31/6

Size 90 by 100 ins.

Usual price 45/6

Special sale price 33/6

Size 100 by 108 ins.

Usual price 49/6

Special sale price 39/6

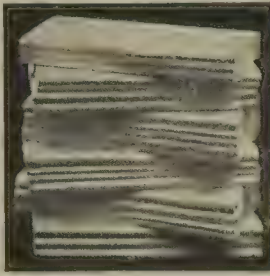


TABLE NAPKINS

250 doz. Special Offer. All Linen Damask Table Napkins, as illustrated.

Size 24 by 24 ins.

Usual price 39/6 doz.

Special sale price 30/- doz.

160 doz. Fine Double Damask Table Napkins in charming Floral Designs.

Assorted patterns.

Size 25 by 25 ins.

Usual price 50/- doz.

Special sale price 42/6 doz.

HANDKERCHIEFS, Etc.

Fancy Coloured Lawn Handkerchiefs. To clear,

3/6 the ½ doz.

Ladies' White Lawn Handkerchiefs. Special value.

To clear, 2/3 the ½ doz.

Imitation Filet Lace Cushion Cover. To clear, 2/3 each.

Charming Reproduction Lace Oval Table Centre.

Size 14 by 20 ins.

To clear, 4/11 each.

DRAPERY BARGAINS.

CRETONNES.

2,000 yards 31 ins. Unglazed Chintz, floral design with green stripe background.

Usual price 4/6 yd.

Special sale price 1/9½ d yd.

3,000 yards 50 ins. Cretonne in old English Chintz design and colours.

Usual price 5/11 yd.

Special sale price 3/11 yd.

Short lengths of Hand Printed Linens, Taffetas, Cretonnes, etc., also remnants to be sold at half-price.

Samples of Sale goods cannot be sent by post.

15,000 yards 31 ins. Cretonne, both reversible and single prints, in a large range of designs and colours.

Usual price 3/3 yd.

Special sale price 1/11½ d yd.

6,000 yards 31 ins. French and English Taffeta in handsome designs.

Usual price 4/11 yd.

Special sale price 2/11 yd.

CASEMENT CLOTHS.

15 pieces 50 in. Cotton Gabardine, suitable for Casement Curtains or Dresses, in Green only.

Usual price 4/11 yd.

Special sale price 2/11½ yd.

7,500 yards 50 in. Bolton Twill Sheeting in 7 different colours.

Usual price 4/11 yd.

Special sale price 2/11½ yd.

10,000 yards 50 in. Cotton Casement Cloth, in 14 various colours.

Usual price 3/3 yd.

Special sale price 2/3½ yd.

50 large size Floor Ottomans, covered in artistic materials.

Usual price 29/6 each.

Special sale price 22/3 each

TAPESTRIES, Etc.

57 pieces 50 in. Mercer'sed Diagonal Satin in 9 different colours.

Usual price 10/11 yd.

Special sale price 7/9 yd.

20 pieces 50 in. Lustre Damask in 8 artistic colours.

Usual price 19/6 yd.

Special sale price 13/9 yd.

25 pieces 50 in. Cotton and artificial Silk Satin, colours Green, Light Blue, Dark Blue, and Rose. This has weaving imperfections.

Usual price 14/6 yd.

Special sale price 7/11 yd.

150 Cross Stripe Chenille Covers, in Green, Blue, Rose, and Brown, size 5 ft. by 6 ft. 6 ins. These covers can also be used for Portiere Curtains and Sofa Rugs.

Usual price 52/6 each.

Special sale price 35/6 each.

The Specimen Bargains above are merely examples of the wonderful value to be obtained.

WARING & GILLOW

Furnishers & Decorators to H.M. the King. LTD

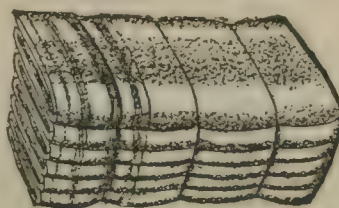
164-180 OXFORD STREET, LONDON, W. 1.
Telephone: Museum 5000. Telegrams: "Warison, London."

Robinson & Cleaver's GREAT LINEN SALE

DURING this sale you have the opportunity in your grasp of replenishing your linen chest at reasonable cost. If you put it off with the idea that the prices of Linen are coming down you will be sadly mistaken. Examine the facts. Flax before the war was grown in Belgium, Russia, Germany, Austria, France and Ireland. The flax we are getting now is from Ireland, so naturally the demand is greater than the supply, with the obvious result. As manufacturers we foresaw this world-shortage of raw material, so made arrangements for a plentiful supply and are therefore able to offer our world-renowned Irish Linen at Sale Prices.



Lot 481. Empire Period. Pure Linen Damask Table Cloths.
2 x 2 2 x 2½ 2 x 3 2½ x 3 2½ x 3½ 2½ x 4 yards.
31/- 38/7 46/4 58/6 68/8 78/6 each.
NAPKINS: 22 x 22 in., 38/- 24 x 24 in., 51/- dozen.



Bath Sheets.

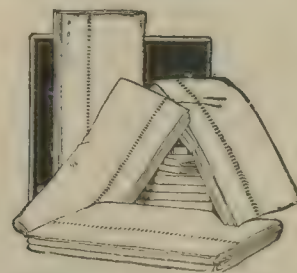
Lot 135. Bath Sheets, white, 16/4, 21/7, 23/5 each.

Lot 136. Bath Sheets, white, hemstitched, 16/1, 21/7, 25/3 each.

Bath Towels.

Lot 133. Bath Towels, white, 35/9, 44/11, 47/6 per doz.

Lot 134. Bath Towels, white, hemstitched, 45/5, 57/9, 68/9 per doz.



Hemstitched Linen Sheets.

No. M Quality.	Heavy Weight
Size (yards)	per pair
2 x 3 Single Bed	122/-
2 x 3½ " "	139/-
2½ x 3½ Double	176/-
3 x 3½ Extra wide	218/-

Linen Pillow Cases.

Size (inches)	each
20 x 30	15/2
22 x 32	17/-
27 x 27	18/3

A copy of our January Sale Catalogue No. J. 3 will be sent post free on request.

Robinson & Cleaver, Ltd.

The Linen Hall, Regent Street,
LONDON, W. 1.

However, rather than disappoint an enormous *clientèle* accustomed to the continuity of these favourite sales, it was decided to organise it as usual for January and February. An illustrated catalogue for men's and women's departments will indicate the nature of the excellent investments to be made, and will be sent free by Messrs. Burberry on receipt of a postcard. It also contains charts and directions for self-measurement. Burberrys' things are the perfection of hygienic and workmanlike protection against bad weather. Race Weatheralls for ladies are offered at 6 guineas, with 9d. for postage; and Burberry top-coats at a similar price. Burberry sports coat and skirt in gabardine, lined with proof check, will be sold for 8 guineas, with 1s. for postage. A variety of useful well-cut and well-tailored skirts are offered for 4 guineas; and a number of hats of great variety from 21s. to 31s. 6d. Heather-mixture golfing stockings at 7s. 6d. are splendid value; 4d. for postage must accompany orders for these, and hats cannot be sent on approval at sale prices. There are many fine investments for men too, such as oddments in trousers—gabardine, tweed, and flannel, at 21s., and knicker-breeches in tweeds and Burberry gabardine at 42s.; in each case the postage is 4d. It is a sale decidedly to the advantage of customers.

Every woman loves Debenham and Freebody's great house in Wigmore Street, because it provides clothes of the smartest and the best. The winter sale begins there on Monday, and lasts a fortnight only. During that time great advantages can be reaped. Nothing could be prettier, cheerier, and more becoming than "pot-pourri"

model coatees in flowered and Paisley satins which raise one's spirits to look at. These have suffered a reduction which will be a real boon to purchasers. Some silk jumper-suits will soon be triumphantly carried off, such excellent value are they. The same may be confidently expected about model silk and woollen stockingette suits. In the fur department smart women will find some delightful opportunities of acquiring for half-price French model fur coats in sable kolinsky, nutria, and moleskin; while muffs and ties, wraps and stoles are all very materially marked down. Beautiful crêpe-de-Chine jumpers will be offered for little more than half their original cost. Very useful, stylish, and pretty are chamois crêpe-de-Chine tailored shirts which wash perfectly, some in ivory-white with striped collars and cuffs, others striped all over. These are marked down to 39s. 6d., and are most excellent bargains. Tea-gowns, coats and skirts, evening dresses, sports coats—everywhere throughout this great house there will be found countless opportunities for sound and pleasant investment.

A characteristic house is that of Liberty—a household word for grace and artistry in dress as in furnishings. Thousands of women numbered among the dressers of distinction have their frocks from this famous firm. That they will hold their 1920 winter sale from Monday next will attract a great many people to their celebrated houses in Regent Street, where they will not go in vain, for reductions in beautiful fabrics abound. There are large selections in lovely floral voile dress-lengths, the designs and colours worthy of the house—more could not be said; the prices are 10s. 6d., 12s. 6d., and 15s. 6d. Patterns of

these will be sent free on application, and Liberty's are not issuing a catalogue. Surplus stocks of Yoru crape, Priory cloth, and voile dresses will be disposed of at much reduced prices. Also there will be crêpe-de-Chine and georgette blouses, children's frocks and coats, velour and velveteen hats included, in the wonderful value offered at Liberty's sale.

We all know that for excellence of quality Waring and Gillow's great house in Oxford Street stands in the van. When, therefore, a sale is being held there, knowledgeable women are on the *qui vive*. On Monday and for a fortnight—from the 5th to the 17th, to be precise—a winter sale will be held in two departments. That devoted to household linen at Waring's is held in high favour, and in it will be found some good bargains. A handsome lace-trimmed double damask table-cloth, 2 by 2½ yards, either oval or oblong, will be sold for 115s., instead of the usual price, 145s. Hemmed cotton sheets, either plain or twill, 2 by 3 yards, will be offered for 21s. 6d. a pair, their ordinary selling price being 27s. 6d. In the larger size, 2½ by 3½ yards, the price will be 31s. 6d. instead of 39s. 6d. A long-cloth hem-stitched pillow-case, 20 by 30 inches, is reduced for this great sale to 3s. 11d. from 4s. 11d.; and hem-stitched huckaback face-towels with damask borders, 18 by 33 inches, will be sold at 29s. 6d., a dozen instead of 39s. 6d. A lace-trimmed Duchesse set for 8s. 9d. instead of 10s. 9d. is a bargain; and so too is a beautiful reproduction of an old lace table-centre, 14 by 20 inches, and oval in shape, for 4s. 11d. The other department in which the sale will be held simultaneously is that for costumes.

A. E. L.

To Landowners & Estate Agents

WANTED to purchase in large or small quantities, standing or felled, all Poplars (except Lombardy) also Lime and Alder. Trees must be clean, straight, and plantation grown, and of the following dimensions; maximum 18 to 20 ins. diameter under bark, breast high, minimum 10 ins. diameter breast high, under bark. Settlement prompt cash.

Bryant & May, Ltd., Fairfield Works, Bow, London, E. 3.

LLOYD'S IN TUBES,
1s. 6d. & 3s. each

THE ORIGINAL EUXESIS
FOR EASY SHAVING.

WITHOUT THE USE OF SOAP WATER OR BRUSH.
Put a Tube in your Kit Bag

The Label of the ORIGINAL and GENUINE Euxesis is printed with Black Ink ONLY on a Yellow Ground, and bears this TRADE MARK

We bought the business, with the recipe, trade mark, and goodwill from the Executrix of the late A. S. Lloyd. The genuine is now manufactured ONLY at our Factory From all Chemists, Hairdressers, &c.

Wholesale only: R. HOVENDEEN and SONS, Ltd.,
Barnes Street, W., and City Road, E.C.



Cuticura Clears Dandruff In One Treatment

On retiring, comb the hair out straight, then make a parting, gently rubbing in Cuticura Ointment with the end of the finger. Anoint additional partings until the whole scalp has been treated. The next morning shampoo with Cuticura Soap and hot water. Rinse in tepid water. Repeat in two weeks if needed.

Soap 1s., Ointment 1s. 3d. and 2s. 6d. Sold throughout the Empire. For thirty-two page skin booklet address: F. Newbery & Sons, Ltd., 27, Charterhouse Sq., London. Also for mail orders with price.

Cuticura Soap shaves without mug.

PANAMA PEARL NECKLETS From 3 Gns

MOST WONDERFUL REPRODUCTION.



IMITATION IN
PERFECTION.
PERFECTION IN
IMITATION.

Old Gold.
Jewellery.
Bric-à-Brac.
Bought or Exchanged.

MACMICHAEL,

49, South Audley Street,
Greenwich Square, London, W. 1

Debenham & Freebody's

COMMENCES
MONDAY,
JAN. 5TH,

SALE

AND CONTINUES
FOR TWELVE
DAYS ONLY.

EXCEPTIONAL BARGAINS IN ALL DEPARTMENTS.



ORIGINAL MODEL FUR WRAP,
by "Rufin," in Seal Musquash
and Nutria, worked in stripes.

Original Price, 279 Gns.

Sale Price, 150 Gns.

ATTRACTIVE EVENING WRAP,
in rich quality Faille Silk, with
deep ruchings of own material.

Sale Price, 7½ Gns.

TAILOR SUIT, in good quality
black and white suiting. Coat
cut on most becoming lines with
flaps worked on flounce. Plain
well-cut skirt.

Special Sale Price, 8½ Gns.

60 RICH VELVET TEAGOWNS,
in different designs and colours,
of which sketch is a typical
example.

To be cleared at 78/6.

Sale Catalogue post free.

These garments cannot be sent on approval.

WIGMORE ST. & WELBECK ST., LONDON, W. 1

Culleton's Heraldic Office

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Arms and Pedigrees of English and Foreign Families.

Genealogical Researches in Public Records.

PEDIGREES ENGROSSED AND EMBLAZONED

Seals, Rings, Dies, Book-plates (ex-libris) Engraved.

ARMORIAL STAINED GLASS.**MEMORIAL TABLETS.**

Sketches and Designs for all purposes.

MATERNITY

(Finlay's Patents, adjustable any size.)

SKIRTS 6gs. to 21s.

GOWNS 14gs. to 6gs.

CORSETS 5gs. to 2gs.

The Lady says:

"I have seen delightful frocks at Finlay's for Maternity Wear... very cleverly planned, being adjustable to any size."

Free Wonderful Baby Book.

Catalogues and Patterns Free.

Write near, Lavender, City, E.C.

H. FINLAY,

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(Facing Selfridges)

FINLAYS,
The Maternity House of Gt. Britain**Hindes****HAIR TINT for Grey or Faded Hair**Tints grey or faded hair any natural shade desired—brown, dark-brown, light-brown, or black. It is permanent and washable, has no grease, and does not burn the hair. It is used by over three-quarters of a million people. Medical certificate accompanies each bottle. It costs 2/6 the flask. Chemists and Stores everywhere, or direct.—**HINDES, Ltd.,** 1, Tabernacle Street, City, London. Patentees and Manufacturers of the world-famous Hindes Hair Wavers.**MENTON—Grand Hôtel des Anglais.**

Centre East Bay—

*The Warmest Corner of the Riviera.***HIGH-CLASS AND YET MODERATE.****Express Yourself**

clearly in writing by using a good reliable fountain pen. One that will start instantly, write smoothly, never blot, and above all one that will suit your hand exactly.

What you need is a

'JEWEL'

Safety Fountain Pen ... No. 100

12/6

Should you prefer a Stylographic Pen, then you must have a

'RECORDER'**10/6**

It is fitted with gold and palladium point and gold spring needle, and is the best stylo made.

The above pens can be obtained from all Stationers and Stores, or direct from Sole Makers:

JEWEL PEN CO., Ltd

(Dept. 14),

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MILLIONS OF PEOPLE**FLORILINE FOR THE TEETH.**

have used this most economical Dentifrice with utmost satisfaction. A few drops produce a most refreshing lather and cleanser, rendering the teeth white, and arresting decay.

Also put up in Powder form.

Absolutely BRITISH.**Why not give it a trial?****Don't Wear a Truss.**

Brooks' Appliance is a new scientific discovery with automatic air cushions that draws the broken parts together, and binds them as you would a broken limb. It absolutely holds firmly and comfortably and never slips. Always light and cool and conforms to every movement of the body without chafing or hurting. We make it to your measure, and send it to you on a strict guarantee of satisfaction or money refunded, and we have put our price so low that anybody, rich or poor, can buy it. Remember, we make it to your order—send it to you—you wear it—and if it doesn't satisfy you, you send it back to us, and we will refund your money. That is the way we do business—always absolutely on the square—and we have sold to thousands of people this way for the past ten years. Remember, we use no salves, no harness, no ties, no fakes. We just give you a straight business deal at a reasonable price.

Write at once for our Illustrated Booklet.

Brooks' Appliance Co., Ltd.

(1759) 80, Chancery Lane, London, W.C. 2

MARSHALL & SNELGROVE'S WINTER SALE

commences MONDAY, January 5th, and continues for THREE WEEKS.

**Original Paris Model FUR CAPE** in very fine Moleskin, beautifully worked, with collar and facings of grey Russian squirrel.

Original Price 220 gns.

Sale Price 120 Gns.**Young Lady's DINNER FROCK** in good quality georgette; simple bodice finished with pleated frill at neck and at waist with ribbon sash and flower; well-cut, straight-hanging skirt with frills. In a few good colours.**Sale Price 6½ Gns.****"SONIA" DAINY TEAFROCK** in crêpe-de-Chine, Kimona bodice, trimmed lace, as sketch, skirt composed of two tiers accordion-pleated over a plain petticoat with panel back. In a good variety of colours and black.**Reduced to 84/-****BARGAINS in SCARVES****White Shetland Wool Knitted Scarf,** 2½ yards long, 1 yard wide, 4/11 each. Former price, 4/6.**New OVER-BLOUSE** in rich brocaded silk, collar can be worn high or low, fullness gathered each side, back panel rather longer than the front.**Sale Price 29/6****Pure CASHMERE JUMPER,** as sketch, made from softest and best quality cashmere yarn in various shades, with contrasting stripes and facings of artificial silk.

Usual price 80/-


Sale Price 63/-**BARGAINS IN STOCKINGS.**

All-Wool Heather mixture stockings; mending wool attached. 7/6 per pair.

REMNANT DAY ON THURSDAY.**Sale Catalogue post free.****These goods cannot be sent on approval.****MARSHALL & SNELGROVE,**

(Debenhams, Ltd.)

VERE ST. and OXFORD ST., LONDON, W.1



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Royal Navy House
21, Old Bond St.
(Piccadilly End.)
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ROYAL NAVAL OUTFITTERS

Inventors Patentees & Makers of the
"GIEVE" LIFE SAVING WAISTCOAT

SPECIALISTS IN QUALITY MEN'S WEAR

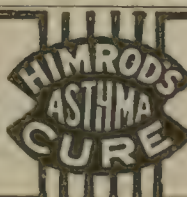
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HOT WATERInstantly
NIGHT or DAY**EWART'S GEYSERS.**
346, EUSTON RD LONDON, N.W.1

Gives instant relief from CATARRH, ASTHMA, etc., etc.



The standard remedy for over 40 years.

At all Chemists

4s. 3d. a tin.

The SUPER BRAND**Spinet****MIXTURE AND CIGARETTES**

SCIENCE JOTTINGS.

THE POLAR BEAR AND PNEUMONIA.

THE announcement that two Polar bear cubs were born at the Zoological Gardens, London, on December 17 aroused widespread interest, for "Sam" and "Barbara" are great favourites among visitors to the Gardens. But this is an event which has happened several times during the last few years, though so far no cubs have been reared. This reflects no discredit upon the parents, nor upon the management of the Gardens, for the same lamentable end has overtaken almost all Polar bear cubs born south of the Arctic regions, while the young of other bears can be reared with relative ease. With each new brace of cubs born to "Barbara" a different method of treatment has been followed, in the hope of averting catastrophe. The mother has been shut up in a warm box, or allowed freedom and given a change of quarters. She has been kept apart from her mate, and allowed access to him. Hand-rearing and the use of foster-mothers of different kinds have each in turn been tried, but in vain. The new cubs have also died.

It has been suggested that this inability on the part of the parents to rear their offspring is due to the utterly different environment in which they are born. In a wild state the pregnant mother makes herself a sure retreat beneath the snow, the warmth of her body melting a spout hole, or air-shaft, for breathing purposes. She has no need to leave this till the winter is past, for before going into retreat she has amassed a store of fat sufficient for her needs. Here, at an even temperature, her young pass the first few weeks of their existence, to emerge presently to feast upon seal-meat.

But, even supposing it were possible to reproduce the conditions of the snow chamber, the chances of survival for the youngsters are not very great. And this because they appear to be very susceptible to the germs of pneumonia, which find such congenial conditions of existence in our climate, while in the far North they cannot exist. Nor do they find Arctic a whit more habitable. This much is clear from the records of Polar explorers, who tell us that colds in the head were unknown save when fresh clothing was unpacked.

All living things normally exposed to the attacks of these microbes have long since acquired a relative immunity

thereto by the elimination of the more susceptible and the survival of the resistant.

The Polar bear, it seems plain, during the first week or two of its life has very little power of resistance to the pneumonia germ. Yet, later, it stands our climate well



AT SANDRINGHAM FOR CHRISTMAS: THE QUEEN OF NORWAY AND THE CROWN PRINCE OLAF.—[Photograph by C.N.]

enough. "Sam" and "Barbara" came to the Gardens when about two years old, and have thriven well, as did their predecessors. What is true of the young Polar bear is true also of many another species when introduced into this climate from some other strongly contrasting therewith, for animals from the Tropics, as well as those from the Poles, have long odds against them.

There are many parallels in this matter of non-resisting powers to new diseases. Europeans, for example, have acquired a large measure of immunity from the attacks of measles and small-pox. But where these have been introduced among peoples never before exposed to their attacks an appalling mortality has resulted. The frightful devastation caused by the outbreak among cattle, buffaloes, and antelopes in Africa a few years ago furnishes another illustration. Yet another is that of the native rat of Christmas Island, in the Indian Ocean. When, during 1897-98 my colleague Dr. C. W. Andrews was carrying out the exploration of this island he found *Mus nativitatis* almost too abundant. On returning a few years later he only saw but few specimens, and these were in a moribund condition, having apparently fallen victims to some new disease introduced by rats from ships, which had, since his first visit, been constantly calling at the island for the shipment of phosphates. The ship-rat was now swarming over the island; *Mus nativitatis* was at its last gasp, and is now extinct.

W. P. PYCRAFT.

The outstanding event in aviation, rivalling the historic Transatlantic flight, is undoubtedly the flight to Australia, accomplished by Captain Ross Smith, M.C., D.F.C., A.F.C., on a Vickers-Vimy biplane with Rolls-Royce engines. It is noteworthy that the same type of carburetter was used on both events—namely, the Claudel-Hobson. Another interesting event recently brought to a close, the 10,000-mile test of a 16-h.p. Sunbeam car running on benzol, provided proof of Claudel-Hobson efficiency and economy, an average mileage of 24.57 miles per gallon being obtained.

The engagement of the Hon. Ivy Churchill, elder of the two daughters of Viscount and Viscountess Churchill, to Mr. Cecil Henry Brassey, 1st Life Guards, eldest son of Mr. Leonard Brassey, M.P., and Lady Violet Brassey, of Apethorpe Hall, is one of interest. The bride-elect belongs on her father's side to the house of which the Duke of Marlborough is head. On her mother's side she is a niece of the Earl of Lonsdale. The bridegroom is a grandson of the Duke of Richmond and Gordon on his mother's side, and a great-nephew of the first Earl Brassey on his father's. Lord Churchill, the bride's father, is *persona grata* at Court, and, as the last Master of the Buckhounds, has the allotting of admissions to the Royal Enclosure for Ascot.

URODONAL



"Before taking URODONAL was a helpless invalid."

MEDICAL OPINION:

"Unfortunate sufferers from chronic rheumatism, gravel, gout, sciatica, arthritic migraine, renal or biliary colic can obtain immense relief by taking URODONAL, which will thoroughly eliminate the uric acid from their system. A course of treatment occasionally—at the rate of three teaspoonfuls a day in half a tumblerful of water between meals—is generally sufficient to prevent relapses.

URODONAL, prices 5/- & 12/-. Prepared at Chatelain's Laboratories, Paris. Can be obtained from all chemists and drug stores, or direct, post free, 5/6 & 12/6, from the British Agents, HEPPELLE'S, Pharmacists and Foreign Chemists, 164, Piccadilly, London, W. 1, from whom also can be had, post free, the full explanatory booklets, "Scientific Remedies," and "Treatise on Diet."



"But since taking URODONAL I have enjoyed perfect health. I shall never be without it!"

GLOBEOL

The Ideal Tonic.

Anæmia
Convalescence
Neurasthenia
Nervous
Disorders

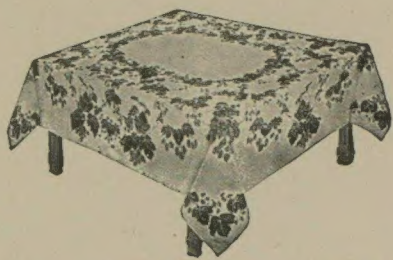


"Courage! Globeol will soon restore your health and strength!"

Globeol is a complete treatment for ANÆMIA. It rapidly strengthens and tones up the whole system, shortens the period of convalescence, and gives a feeling of health, comfort and renewed vigour. After taking Globeol for a few days the eyes become bright, the cheeks glow with colour and life, movements are brisk, and there is complete absence of weariness and depression. As an aid towards recovering from Influenza or any other illness, Globeol is invaluable.

Price 5/- per bottle. Prepared at Chatelain's Laboratories, Paris. Obtainable from all Chemists, or direct, post free, 5/6, from the British Agents, HEPPELLE'S, Pharmacists, 164, Piccadilly, London, W. 1, from whom can also be obtained, post free, the full explanatory booklets, "Scientific Remedies" and "Treatise on Diet."

JANUARY SALE of Irish Linens



Linen Sheets, Pillow-Cases, Towels,
Kitchen Cloths, Handkerchiefs are
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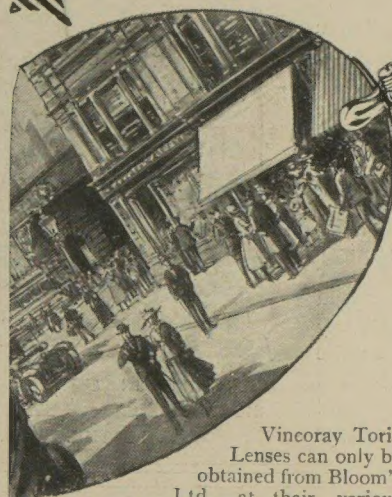
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THE CHRONICLE OF THE CAR.

Taxation
by Mileage.

It is common knowledge that a Committee is sitting to inquire into the best method of taxing road traffic. Some people seem to have the quaintest ideas of how the solution of an equitable tax is to be arrived at. For instance, the Minister of Transport was asked the other day if he was prepared to introduce legislation to provide for the payment by owners of private cars, as well as by omnibus proprietors, of a fair mileage rate to the highway authority. There are two obvious ways in which a mileage tax can be levied. The one is by re-instituting the turnpike system, and inaugurating a method of "pay as you go." That would surely not commend itself to anyone—even to the most rabid anti-motorist—for it has so many and obvious drawbacks I think we may be assured that it is about the last thing to be adopted by the authorities. The other is to compel every vehicle subject to the mileage tax to carry a certified recording instrument, adequately secured against the possibility of its being tampered with. Such an instrument would be read monthly or quarterly, as the case might be, in the same way as the gas-meter; and the mileage account either collected on the spot or rendered later, again like the gas-bill. What would happen if the official instrument broke down half-way through the quarter and refused to register I am not quite certain. Probably we should have to pay on the basis of the quarter in which the summer tour had been taken! I do not think we shall be troubled, though. The Member



MOTURING IN SURREY: A SIX-CYLINDER ARMSTRONG-SIDDELEY CAR OUTSIDE THE FIRE STATION AT LEATHERHEAD.—[Photograph by Birkett.]

who put the question was informed in the politest possible manner that "It is by no means certain that a mileage rate would be in the best interests of the highway authorities."

Presentations to
Past Presidents
of the S.M.M.T.

Mr. S. F. Edge was President of the Society for a strenuous year which finished shortly before the trouble in 1914 which put an end, *pro tem.*, to the social functions of the Society. Mr. Albert Brown was President for an equally busy period which commenced a few months before the Armistice and terminated last summer, by which time the activities of the Society had already attained to the pre-war pitch. On Dec. 18 the members of the Council entertained Mr. Albert Brown and Mr. S. F. Edge to luncheon at the Royal Automobile Club, when the President, Mr. Frank Lanchester, made presentations in recognition of their services as past Presidents. In replying, Mr. Edge laid stress upon the necessity of looking ahead. For instance, it was time now to consider races and other events which might be conducted by the Royal Automobile Club in 1921. Great general advantage, he believes, accrues to countries where such events are held. Mr. Albert Brown referred to the necessity of harmonious working to enable the great volume of business of the society to be transacted. Views differed greatly, but there was general agreement upon the importance of the work of the Society for the benefit of the whole industry in this country. After the luncheon, the Council proceeded to hold its meeting in the Society's Council Chamber for the first time since 1914.

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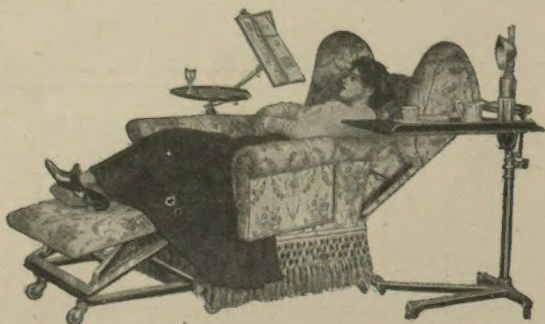
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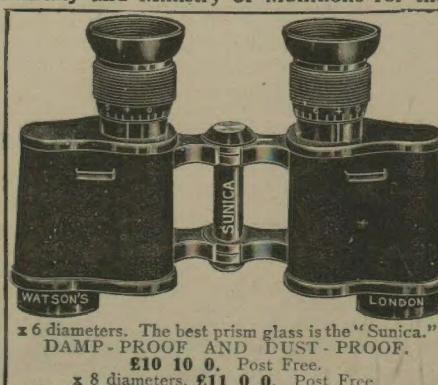
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THE PLAYHOUSES.

"CINDERELLA." AT DRURY LANE.

PANTOMIME perhaps gravitates a little more nearly to revue than usual in the new "Cinderella," at Drury Lane; and there are certain variations made in the matter of the story and its scenario—thus the Baron (of Mr. Claff) is no longer a grotesque spendthrift, but is quite honest, with a trick of bursting into song; there is a male Dandini who helps the heroine to escape from a tower; the part of the "principal boy" is restored for the sake of charming Miss Marie Blanche; instead of the customary page we have a wild boy from the woods; and the scene of the ball is allowed to take place in the open air. Of these changes—which do not, in essentials, transform the character of Mr. Collins's annual, once more a feast of fun and beautiful spectacle—the most notable is that which affects the setting of the ball. Here we see Cinderella, rather sophisticated as Miss Florence Smithson shows her, but with the prettiest vocal trills, riding from fairyland in her gold-and-ivory coach, and joining a dance in which the guests are decked out in delightful Louis Seize costumes. The chief comedians are Mr. Will Evans (quite pleasantly feminine as the Baroness) and Mr. Stanley Lupino, as the wild servant, Pipchin; and they are at their best when acting in concert—laying a table-cloth, for instance, under which the wind is always getting, or cleaning knives that jump out of the machine, or getting tied up in a stair carpet. But a novel turn is the "balancing act" of Mr. Du Calion, who seems to do very daring feats at the top of an unsupported ladder. A word is due to Miss Lily Long, for her quaintness, and to Mr. James Glover, for the musical side of the entertainment.

"DICK WHITTINGTON." AT THE LYCEUM.

The Melvilles have beaten their record with their "Dick Whittington" production; not only is it one of the

breeziest and jolliest pantomimes given at their theatre: it also furnishes some really impressive spectacular effects. Its opening picture of Cheapside has breadth and open-air feeling; while as for the scene of the Moroccan Court, it is a blaze of legitimate and happily arranged colour. Lyceum playgoers, however, while glad of the pictorial, ask above all things for fun; and there is an excellent staff of comedians, headed by Mr. George Bass, who hails from Lancashire, and is droll enough, with Mr. Daley Cooper's assistance, while supposed to be on board a rolling ship, to make the proverbial cat laugh. Miss Mabel Lait proves an attractive Dick; a similar compliment is deserved by Miss Edith Drayson as Dick's sweetheart; and Mr. Stanley Damerell works hard as the Alderman. Of the specialty turns always offered at the Lyceum, perhaps the best this season is a slack-wire performance of Mr. Harry Lamore; but it may be added that there is an abundance of good dancing.

"FIFINELLA." AT THE SCALA.

Ingeniously blended together in Mr. Basil Dean's Christmas entertainment at the Scala, "Fifinella," are, on the one hand, a burlesque of the old-style pantomime; and, on the other, a pageant of the fairyland beloved by poets and children, wherein elves and goblins, Harlequin and Columbine, owls and musical trees, Dream Merchant and Man in the Moon, magic spiders and rushing East Wind, produce enchantment in an atmosphere of moonlight and dreams. It is a happy blend of fun and fancy, the fanciful side being rightly allowed to be in the ascendant, and giving opportunities for charming stage-pictures and stage-groupings, which are designed, dressed, and lit in a way that speaks well for the imagination of the various artists concerned. There is first-rate singing from Mr. Alfred Heather as the Man in the Moon; there is good fun provided by Mr. Roy Dyford as Demon King, and

Miss Minnie Rayner as Fairy Queen; we get pleasant, fanciful representations in the Dream Merchant of Mr. Malcolm Keen, the Owl of Mr. Harvey, the Elf-King of Mr. Elton, and the East Wind of M. Wania; while the dances of Miss Edna Maude are always a delight.

"PUSS IN BOOTS." ETC., AT THE MARGARET MORRIS THEATRE.

The pupils of the Margaret Morris School of Dancing and Other Arts are appearing at the little Chelsea theatre in an entertainment specially designed for younger children, and free from the excrescences which not infrequently mar fairy-tale productions. "Puss in Boots," and "The Princess and the Swineherd" are the two constituents of a programme which aims at the direct telling of a story—tasteful musical illustration, and simple but charming designs. Miss Hermione and Miss Angela Baddeley play the leading parts, and deserve all the applause which their childish admirers extend to them; and clever work also comes from Miss Nancy Nicholls, Miss Irene Kensington, and Misses Phoebe and Freda Gaye. Parents on the look-out for a refined and ingenuous Christmas show to which to take tiny youngsters cannot make a mistake in going to Chelsea, and, incidentally, may more than probably obtain enjoyment themselves.

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